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As in the past several issues, AFV-G2 is continuing to present the first complete illustrated history of the Armored Fighting Vehicles of the Italian Army. Authored by Dr. Nicola Pignato, a widely-known historian on the Armed Forces of Italy, this serialized book is available only to readers of AFV-G2. The portion of the book in this issue will be found at the center of the magazine, between pages 20 and 21, bound in with the regular pages. To remove the center supplemental sheet in this issue, use a razor blade or sharp knife to carefully slit between the staple holes in the sheet, which will then be free of the magazine. Readers may then punch the supplemental sheets with a three-ring binder punch and install them in a separate binder. When placed together with the other supplemental sheets from AFV-G2, the complete series will present a detailed history of all Italian armored vehicles, with numerous previously-unpublished photographs and 1:50th scale drawings. The sheets are separately numbered for ease of binding, and at the end of the publication, a complete index and table-of-contents will also be furnished to readers in order to complete the book.





## Contents

German 3.7cm and 5cm Ammunition, by Mark Diehl	4
Wargamer's Data Sheet: U.S. Army M3 Halftrack	9
Tactical Markings of the Waffen-SS, Part 2, by James Steuard	10
The U.S. Army M548 Tracked Cargo Carrier, by David Haugh	12
Armor in Pictures: Readers submitted Armor Photos	16
The Baron's Bookshelf.....with Book Reviews.....	18
The Soviet T-35 Heavy Tank, by Wayne Larson	19
Soviet T-35 Heavy Tank Four-View Drawings in 1:32 scale, by S. R. Cobb	20
Photo Epilog: The Japanese Type 95 Light Tank "Kyu-Go"	23
Armor in Berlin, by CPT Dwight C. McLemore	24
The Indian Army Reconnaissance Regiment HQ, by William Platz	26
Organization Chart: Indian Army Recce Regiment HQ	27
Color 'n Camouflage: The U.S. Army M60A1 in Korea	28
Historian's Notebook, by William Platz	30
AFV Inquiry: Questions & Answers for the Armor Reader	31
Anzio, the Soft Underbelly of Europe, Part VI., by John Yonos	32
Modelling for Perfectionists; a Sd. Kfz. 7 Cloth Top	36
Letters to the Editor	37
The Tamiya Sd. Kfz. 251 Armored Halftrack, by Robt. McArthur	37
AFV's of Italy, the continuing series by Dr. Nicola Pignato	Between 20 and 21

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## Cover:

This issue's cover illustration is of an M60A1 Medium Tank of "B" Company of the 72nd Tank Battalion, one of the divisional armor units of the U.S. Army's 2nd Infantry Division in Korea. The photo shows the tank while on winter maneuvers, traveling through a nearly frozen stream. For more information on the markings scheme of this and other U.S. Army tanks in Korea, see the story on page 28. Our photo was provided by the U.S. Army, 2nd Infantry Division PIO.

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AFV-G2 is a magazine, published monthly for Armor enthusiasts, with the purpose of gathering and disseminating information about Armored Fighting Vehicles and their employment; to provide an opportunity for persons seriously interested in the history of Armored Fighting Vehicles, in the modeling of these AFV's and associated equipment, and in the playing of military Wargames utilizing miniature AFV's, to share ideas and items of mutual interest and to promote an interest and awareness in the subject of Armored Fighting Vehicles.

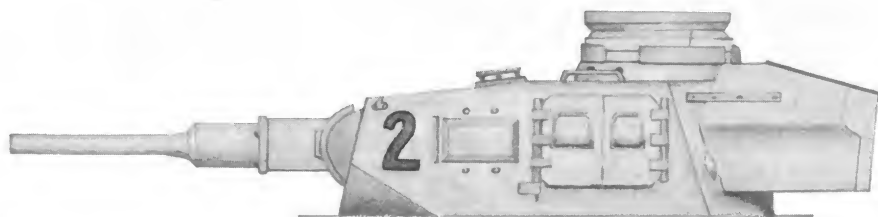
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# An Historical Appraisal:

## GERMAN



# 3.7cm & 5cm AMMUNITION

by Mark Diehl

As the third article discussing German ammunition in World War II., this segment is devoted to rounds used in 3.7cm and 5cm weapons. Like many other weapons of the war, the 37mm gun can trace its lineage into the 19th Century. At the St. Petersburg Convention of 1868, a minimum weight for explosive projectiles was determined .....this weight corresponding to the early 20th Century 37mm HE round. Designed by Benjamin Hotchkiss, the 37mm weapon was quickly adopted by many nations prior to World War I. As tank armament, the gun was introduced during the Great War on French light tanks. Maturing through the Thirties, the 37mm gun became the typical armament on light-medium tanks by the eve of the Second World War.

With the Gun-Armor race still in its infancy, German Reich ordnance personnel were at odds over the arming of the Pz.Kpfw.III. Since the Infantry already possessed a 3.7cm Anti-tank gun, the Weapons Department favored standardizing it as the principal armor-piercing weapon -- a view further espoused by Artillery personnel who considered the 3.7cm gun capable of dealing with most situations. The Inspectorate for Mechanized Troops, however, insisted on gaining advantage with a 5cm weapon. As it was, the Panzer forces won-out; after 1939, the Pz.Kpfw.III was armed with the 42-caliber long 5cm KwK. This gun proved adequate through the fighting in France and North Africa. Finally acceding to General Guderian's long-standing demand for a tank-mounted long-barrel 5cm gun, the 5cm KwK 39 began to see action in 1941. This gun when modified for field-carriage mounting was the 5cm Pak 38 anti-tank gun.

Medium anti-aircraft protection for Panzer units was initially accomplished by mounting the 3.7cm Flak 18 and Flak 36 on un-armored halftracks, and the 3.7cm Flak 37 on a field-carriage. These weapons were automatic, operating on both recoil and residual gas pressure. Ballistically, all were identical; the model differences being confined mainly to the mount. At first appearance, the 3.7cm Flak 37 showed little difference from the earlier models. This gun, however, was operated completely by gas pressure, and had a practical rate of fire about twice that of the previous guns. Single barrel versions appeared in the field and were mounted on both the Pz.Kpfw.IV, and

the un-armored halftrack chassis. An over/under twin version (designated as the Flakzwilling) was produced; the guns could have independent or simultaneous fire. The twin gun mounted on the Panzer IV, chassis was under development as the "Coelian" and "Ostwind II" systems as the war ended.

Similar in appearance to the 3.7cm Flak 36, the 5cm Flak 41 was a gas-operated, fully-automatic gun. Its field mount was a four-wheeled trailer, generally drawn by halftrack prime-movers. As a self-propelled unit, the 5cm gun was experimentally mounted on trucks and on the Sd.Kfz. 251/22 halftrack.

Following German ammunition methodology, all of the rounds of ammunition for these weapons were of the fixed type. Cartridge cases were mostly of brass, although steel case '5cm Pak 6360' appeared in 1942, and steel 3.7 cm Flak cases appeared in the latter half of the war. Tank mounted guns used cartridges containing the C/22 electric primer. Anti-tank and Flak guns (both 3.7cm and 5cm) used the C/12 nA and C/13 nA percussion primers respectfully. Propellants for 3.7cm ammunition were: 1) "Ng1 R. P." or flaked Gudol. (See page 22 of AFV-G2, Vol.3, No.11 for a further explanation of these propellants.)

Ammunition types for the 3.7cm caliber were of HE, AP, HVAP and HEAT configurations. In the 5cm caliber, ammunition types consisted of HE, HE Incendiary, AP, APC and HVAP. All rounds except the 3.7cm Steilgranate came with a space for tracer insertion. Depending upon the situation, the tracer could be left intact or taken out of the projectile.

All HE "Sprenggranate" rounds were nose-fuzed for impact. Comparing the 3.7cm Flak and KwK/Pak HE rounds, one notices that the former had a larger weight of explosive. The principal reason for this was the lighter Flak shell case -- an aircraft target is much softer than a ground vehicle or emplacement. The further decrease in explosive weight in Entry 6 of Table III was due to the presence of an internal tracer, which occupied about half of the volume available for explosive. Similarly constructed, the '5cm Br Sprgr Patr 41 L'Spur' had in place of the large tracer, a metallic incendiary composition. The Magnesium alloy, termed "Leuchtsatz", was ignited by the hot gas in the muzzle flash as the round was fired. This

TABLE I. - GERMAN 3.7cm &amp; 5cm WEAPONS

Designation	Model	Caliber Length	Employment / Vehicle (Sd.Kfz. Number)
-------------	-------	----------------	---------------------------------------

**3.7cm Tank & Anti-tank Guns:**

3.7cm KwK	A7	40	Panzer 38(t)
3.7cm KwK		45	Panzer III.A, B, C, D (I4I)
3.7cm Pak	35/36	45	Split-Trail Towed AT Gun; Halftracks (250/10)(251/10); ex-British Universal Carrier; ex-French 'Chenillette' Armored Carrier

**3.7cm Anti-aircraft Guns:**

3.7cm Flak	18	60	Cruciform Field Mount; Halftrack (7/2)
3.7cm Flak	36	60	Triangular Platform Field Mount; Halftrack (7/2)
3.7cm Flak	37	60	Flak 18 on modified Field Carriage
3.7cm Flak	43	60	Single & Twin (Over/Under) Field versions; Fgst. Pz.Kpfw.IV. 'Möbelwagen' and 'Ostwind I.'; Halftrack SWS*

**5cm Guns:**

5cm KwK		42	Panzer III.E, F, G, H (I4I)
5cm KwK	39	60	Panzer II.'Luchs'(I23); Panzer III.J, L (I4I)
5cm KwK	39/1	60	s.Pz.Späh.Wg. 'Puma' (234/2)
5cm Pak	38	60	Split-Trail Towed AT Gun
5cm Flak	41	60	Triangular Platform Field Mount; Halftrack (251/21)(experimental); Truck (experimental)

\*schwerer-Wehrmacht-Schlepper

material served both as a tracer and as an ignition agent for combustibles (aircraft fuel and ordnance) within the target, and the round was effective in this service.

Armor-piercing 3.7cm rounds had no armor-piercing or ballistic cap. The projectile case (as opposed to the cartridge case) had a two-piece construction: a hardened steel "shot" nose being welded to a carbon steel body. Armor-piercing shot for the 5cm weapons, Entry 9, was of similar construction, while a blunt-nosed AP cap was added on the round in Entry 11. It should be remembered that at about this time the Allies began face-hardening armor, and the addition of the AP cap nullified the advantage of face-hardening armor plates.

As the Allies captured 3.7cm and 5cm HVAP ammunition, the term "Arrowhead" was popularized.... these two projectiles (as did "squeeze-bore" rounds) bore such a resemblance. Contained within the 3.7cm Pzgr. 40 was a tungsten-carbide core 5.64cm long, 1.57cm in diameter and weighing 124 grams. In the 5cm Pzgr. 40, the core weighed 337 grams and measured 7.45cm in length and 2.06cm in diameter. These rounds were not usually

fired from Flak guns.

As the 5cm Pak 38 was introduced, a means was sought to adapt the 3.7cm Pak to increase hitting power. The Steilgranate or Rodded-Bomb shaped charge grenade was the German solution. The charge was a hollow cylinder shape and utilized two fuzes and two boosters, one per fuze. Dimensions for the grenade were a diameter of 14.5 cm and a length of 27.5cm. Placement of the nose-fuze added another 5.3cm to the length. Six symmetrically placed tail fins were held by a perforated sleeve extending from the grenade base -- making the total length 73.8cm. While the perforated sleeve fit over the Pak barrel, a machined rod (and hence the name) slid inside the barrel. This rod, with three pressure-sealing annular rings recessed into the rod-end, received the propelling charge (or thrust). A standard 6331 cartridge case with 187 grams of Ngl. R. P. powder sealed-in by two cork disks provided the power. As for performance, the Steilgranate 41 could penetrate 150mm of armor, and its maximum accurate range against a moving target was typically 125 meters. Although only

- Text continued on Page 36 -



3.7cm Pak 35/36 on Sd.Kfz. 251/10, circa 1941

Opposite Page:

5cm KwK 38, L/42, in a Panzer III, Ausf. F, circa 1941

TABLE III. - PHYSICAL DETAILS OF 3.7cm &amp; 5cm PROJECTILES

ENTRY	1	2	3	4	5	6	7	8
GERMAN DESIGNATION:	3.7cm Steil-granate 41	3.7cm Pzgr. Patr. 18	3.7cm Sprgr. Patr. 18	3.7cm Sprgr. Patr. 40	3.7cm Pzgr. Patr.	3.7cm Sprgr. Patr. 18 umg	3.7cm Pzgr. Patr. 40	5cm Pzgr. Patr. 40
FOR WEAPON:	Pak 35/36	Flak 18 Flak 36 Flak 37 Flak 43	Flak 18 Flak 36 Flak 37 Flak 43	Pak 35/36 3.7cm KwK	Pak 35/36 3.7cm KwK	Pak 35/36 3.7cm KwK	Pak 35/36 3.7cm KwK	KwK 38 KwK 39 Pak 38
WEIGHT:	8.31 kg.	.757 kg.	.620 kg.	.674 kg.	.683 kg.	.615 kg.	.354 kg.	.888 kg.
BURSTING CHARGE:	60/40 Cy-clonite/TNT	PETN/Wax 82/18	PETN/Wax 90/10	PETN/Wax 90/10	PETN/Wax 82/18	PETN/Wax 90/10	None	None
CHARGE WEIGHT:	2.52 kg.	24 gm.	124 gm.	45 gm.	13 gm.	26 gm.		
BOOSTER:	2- KzZdlg 34 Np.	None	None	None	None	None		
FUZE:	Az 5075 & Bz 5130	Bz. 5103	Kopf.Z Zerl.P Kopf.Z. Zerl.Fg	Az. 39	Bz. 5103	Kopf.Z Zerl.P or Az. 39		
COLOR:	Yellow w/Red Band below nose	Black	Yellow	Silver-Gray	Black w/Red Stencil	Silver-Gray w Yellow Band	Black w/Red "Aux 7a40" on body	Black
NOTES:	1.	Tracer	Tracer	Sm.Tracer	Tracer	Lge.Tracer	Tracer	Tracer

ENTRY	9	10	11	12
GERMAN DESIGNATION:	5cm Pzgr. Patr. KwK	5cm Sprgr. Patr. 38 KwK	5cm Pzgr. Patr. KwK 39	5cm Br. Sprgr. Patr. 41 L'Spur
FOR WEAPON:	KwK 38 Flak 41	KwK 38 KwK 39 Pak 38 Flak 41	KwK 38 KwK 39 Pak 38 Flak 41	Flak 41
WEIGHT:	2.06 kg.	1.89 kg.	2.08 kg.	Unknown
BURSTING CHARGE:	PETN/Wax: 87/13	TNT	PETN/Wax: 87/13	Unknown
CHARGE WEIGHT:	16.4 gm.	166 gm.	24.6 gm.	Unknown
BOOSTER:	None	PETN Wax	None	Unknown
FUZE:	Bz. 5103	Az. 39	Bz. 5103	Unknown
COLOR:	Black	Green, Black Stencil & Red band on nose	Black w unpainted band on nose	Yellow, Black "35" on bourelet, "Br" on body
NOTES:	Tracer, No AP Cap	2.	Tracer, 3.	

General Notes:

1. Bursting Charge is two shaped-blocks cemented inside case.
2. Red Phosphorus smoke box in projectile base.
3. Round has blunt AP cap.

TABLE Va. - 3.7cm ARMOR PENETRATION

Weapon Data	3.7cm KwK or 3.7cm Pak 35/36			3.7cm Flak 18, 36 & 37		3.7cm Flak 43	
	Sprgr. Patr. 40	Pzgr. Patr.	Pzgr. Patr. 40	Sprgr. Patr. 18	Pzgr. Patr. 18	Sprgr. Patr. 18	Pzgr. Patr. 18
Projectile:							
Weight in Kg.	.674	.683	.354	.620	.757	.620	.757
Muzzle Velocity	745 m/s	745 m/s	1030 m/s	828 m/s	678 m/s	845 m/s	695 m/s
<u>Range</u>	ARMOR PENETRATION (Figure of Merit = 1.2) (Penetration in mm.)						
Point Blank	23	68	85	21	69	24	71
500 m.	16	47	51	15	48	17	49
1000 m.	-	28	12	-	28	-	29
1500m.	-	10	-	-	10	-	10

TABLE Vb. - 5cm ARMOR PENETRATION

Weapon Data	5cm KwK (38)			5cm KwK 39, Pak 38, & Flak 41		
	Sprgr. Patr. 38 KwK	Pzgr. Patr. KwK	Pzgr. Patr. 40	Sprgr. Patr. 38 KwK	Pzgr. Patr. KwK 39	Pzgr. Patr. 40 *
Projectile:						
Weight in Kg.	1.89	2.06	.888	1.89	2.08	.888
Muzzle Velocity	452 m/s	685 m/s	1050 m/s	549 m/s	823 m/s	1198 m/s
<u>Range</u>	ARMOR PENETRATION (in mm.) (Figure of Merit = 1.2)					
Point Blank	30	85	126	37	99	165
500m.	23	63	90	28	75	116
1000m.	18	48	58	22	59	70
1500m.	13	35	24	16	44	26

\*Note: 5cm Flak 41 did not fire Pzgr. Patr. 40



TABLE II. - 3.7cm &amp; 5cm CARTRIDGE CASE DATA

Designation	Length	Mouth Dia	Shoulder Dia.	Rim Dia.	Weight	Primer	Weapon Useage
6331	24.78cm	3.81cm	4.13cm	5.08cm	.478 kg.	C/13 n/A	3.7cm Pak 35/36
6348	25.8cm	4.25cm	4.13cm	4.68cm	.693 kg.	C/13 n/A	3.7cm Flak 18, 36, 37, 43
6317	28.75cm	5.08cm	6.82cm	7.77cm	.850 kg.	C/22	5cm KwK 38
6360 st	41.4cm	5.08cm	6.67cm	7.77cm	1.24 kg.	C 12 n A	5cm KwK 39, Pak 38
5cm Flak 41	34.6cm	5.08cm	6.82cm	7.10cm	.932 kg.	C 12 n A	5cm Flak 41

TABLE IV. - COMPLETE ROUND DATA

Type of Round	Caliber Length	Round Length	Round Weight	Propellant Weight
3.7cm Pzgr. Patr.	45	33.7cm	1.32 kg.	.189 kg.
3.7cm Sprgr. Patr. 40	45	35.4cm	1.32 kg.	.175 kg.
3.7cm Pzgr. Patr. 40	45	30.4cm	.954 kg.	.142 kg.
3.7cm Sprgr. Patr. 18	60	35.0cm	1.51 kg.	.190 kg.
3.7cm Pzgr. Patr. 18	60	31.8cm	1.58 kg.	.185 kg.
5cm Sprgr. Patr. 38 KwK	42	47.3cm	3.12 kg.	.849 kg.
5cm Pzgr. Patr. KwK (AP)	42	41.5cm	3.46 kg.	.849 kg.
5cm Pzgr. Patr. 40	42	36.7cm	2.37 kg.	.545 kg.
5cm Sprgr. Patr. 38 KwK	60	60.2cm	3.28 kg. (e)	.844 kg. (e)
5cm Pzgr. Patr. KwK (APC)	60	55.4cm	3.75 kg. (e)	.849 kg. (e)
5cm Pzgr. Patr. 40	60	49.8cm	2.55 kg. (e)	.849 kg. (e)
5cm Br. Sprgr. Patr. 41 L' Spur (FLAK ONLY)	60	53.0cm	4.38 kg.	.522 kg.

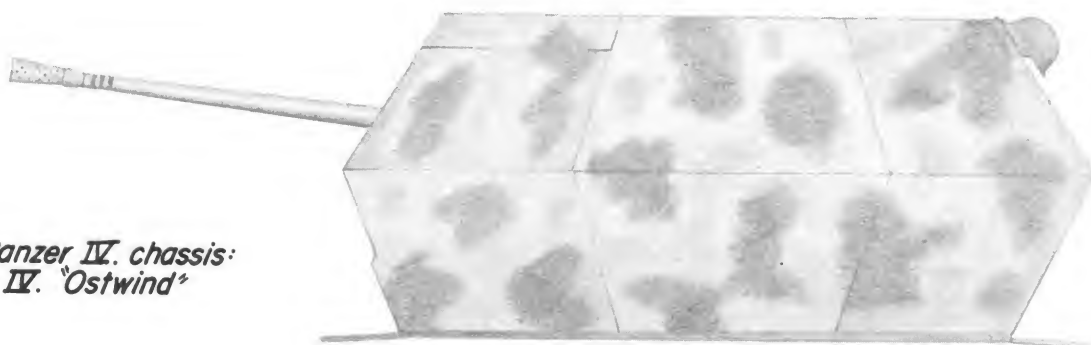
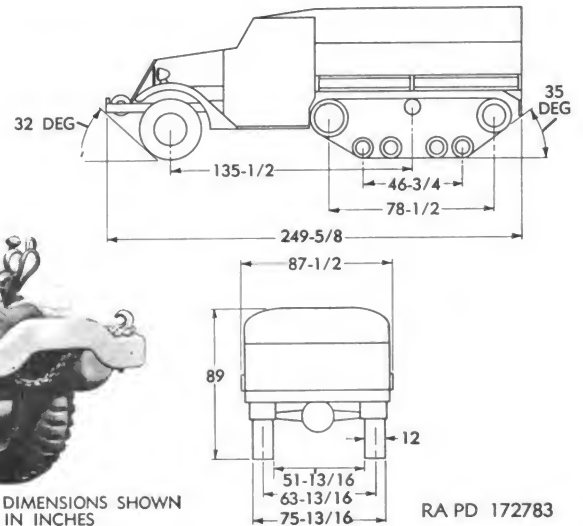
3.7cm Flak 43 on Panzer IV. chassis:  
Flakpanzer IV. "Ostwind"

TABLE VI. - PROJECTILE FUZE DATA

Fuze Designation	Location	Type	Length	Max. Dia.	Thread L.	Delay
AZ 39	Nose	Mechanical Impact	43.5mm	33.3mm	7.8mm	Instantaneous
Az 5075	Nose	Mechanical Impact	47.5mm	30.0mm	6.3mm	Instantaneous
Bz 5130	Base	Mechanical Impact	41.9mm	25.4mm	6.3mm	Instantaneous
3.7cm Kopf.Z. Zerl. P. and Zerl. Fg.	Nose	Mechanical Impact	44.4mm	31.7mm	11.1mm	Instantaneous and Self-Destruct at Maximum Range



## CARRIER, PERSONNEL, HALF-TRACK, M3



NOTE: ALL DIMENSIONS SHOWN  
ARE IN INCHES

RA PD 172783

Technical Manuals: 9-710, 9-1710, 9-1710C, 9-1711, 9-1827B, 9-1827C, 9-1828A, 9-1829A; Supply Catalog: SNL G-102.

### Classification: Limited Standard.

**Armament:** 1 gun, machine, cal. .30, Browning, M1919A4 (flexible) pedestal mounted behind center seat of driver's compartment.

**Ammunition:** 4,000 rounds, cal. .30; 540 rounds, cal. .45, for sub-machine-gun; 22 hand grenades; 24 mines, antitank w/fuze.

**Purpose:** To transport cargo and personnel in combat zone.

**Communications:** (SCR-193 or SCR-245 or SCR-506 or SCR-508 or SCR-510).

### GENERAL DATA

Crew	13
Weight (lb)	Net 15,500; Payload 4,500; Gross 20,000
Front-axle gear ratio	6.8:1
Rear-axle (jackshaft) gear ratio	4.44:1
Axle load (lb):	
Empty	front 5,735; rear (each track) 4,883
Loaded	front 7,400; rear (each track) 6,300
Tires (combat):	
Ply 12; Size 8.25 x 20; Pressure	(psi) 55
Tread, center-to-center, front	(in.) 63 1/4
Track ground pressure (loaded)	(psi) 11.3
Shipping dimensions, uncrated	(cu ft) 1,127; (sq ft) 152
Vehicle dimensions:	
Ground clearance	(in.) 17 1/4
Pintle height (loaded)	(in.) 28
Electrical system	(volts) 12
No. of batteries	1
Type of ground	negative
Fuel octane rating	72
Capacities:	
Fuel	(gal) 60
Cooling system	(qt) 26
Crankcase, refill	(qt) 10 1/2
Transfer and transmission (qt)	w/o PTO 7 1/4; w/PTO 9
Axles (qt)	front 3 1/4; rear 6
Winch:	
Load capacity	(lb) 10,000
Oil capacity	(qt) 2
Brakes:	
Manufacturer: Bendix or Wagner	Type: hydrovac
Parking brake, type	transfer
Transmission forward speeds	4
Gear ratio	High 1:1; Low 4.92:1
Transfer speeds	2
Gear ratio	High 1:1; Low 2.48:1

### PERFORMANCE

Maximum grade ability	(percent) 80
Turning radius	(ft) 29 1/4
Fording depth	(in.) 32
Fuel consumption, loaded	(mpg) 3 1/2
Cruising range, loaded	(mi) 210
Allowable speed, recommended	(mph) 45
Maximum recommended towed load, gross, off highway	(lb) 4,500

### ENGINE

Manufacturer: White	Model 160AX
Type	L-head, 4-cycle; No. of cylinders (in line) 6
Displacement	(cu in.) 386
Bore	(in.) 4
Stroke	(in.) 5 1/4
Compression ratio	6.44:1
Governed speed	not governed
Brake horsepower (max w/std accessories)	127 at (rpm) 3,000
Torque (max)	325 lb-ft at (rpm) 1,200

### ADDITIONAL DATA

Data given for vehicle w/winch. For vehicle w/o winch and w/front roller, changes in data are as follows: Net weight (lb): 15,000; Payload 5,000. Axle load (lb): Loaded, front 6,900; rear (each track) 6,550; Empty, front 5,175; rear (each track) 4,913. Over-all length (in.) 243 1/4; Shipping dimensions, uncrated: (cu ft) 1,100; (sq ft) 148. Angle of approach (deg) 37. Equipped w/controller for trailer electric brakes.

Live axles, type.....spiral-bevel, full-floating  
Transmission, type.....constant-mesh

# TACTICAL MARKINGS of the WAFFEN-SS

## Part 2.

by James Steuard

Part 2 of this series continues detailing Waffen-SS tactical markings by presenting information on the 2. SS-Panzer-Division "Das Reich" and the 3. SS-Panzer-Division "Totenkopf", starting with the latter unit.

The "Totenkopf" Division was formed in the late summer of 1939, seeing its first combat during the French Campaign of 1940. As it was created from volunteers from the "Totenkopfverbände" (Concentration Camp Guards), its members continued to wear the "skull and crossbones" insignia of the guard units. Photographic evidence shows that this division was the first unit of the Waffen-SS to carry a tactical marking on its vehicles. The divisional tactical insignia consisted of a white skull with crossed bones behind it; this insignia was derived from the "skull" collar insignia worn by divisional members, as shown below. The insignia is from the author's



collection. While the insignia on the collar tab usually faced to the right, most of the examples of the divisional tactical marking in use indicates that the skull usually faced left on vehicles, in a mirror-image of the collar tab insignia. The vehicular tactical marking was consistently painted in white, with a dark background (of the regular vehicle color) on snow camouflage, or to show better contrast against the later, lighter vehicle colors.

The first photograph below shows the divisional tactical marking as it appeared during the French Campaign; the photograph was taken from a rather-rare divisional publication titled Damals/Totenkopf in Westen (published in 1941). The vehicle is a Mercedes "Omnibus" which was used as the divisional command post (or headquarters) at this time. The vehicle appears to have been painted in an overall dark green color. Note the gold-yellow letter "G" to indicate that the "T" Division was assigned to General Guderian's corps during this part of the French Campaign. The divisional command pennant



in white was displayed on the opposite, driver's side fender, in a simplified fashion.

The second photo (below) shows a heavy motorcycle and sidecar combination of one of the three "Totenkopf" Infanterie-Regimenter (of the division) photographed in Russia during the winter of 1941-42. Note the winter camouflage on the vehicle and the dark background that surrounds the "skull" and the infantry small-unit marking. This photo was taken from a German newspaper of the period (1942).

The third photo (on the next page) illustrates a 3-ton Opel Blitz m.Lastkraftwagen (or Supply Truck) with closed body. It appears that this photo was taken in 1944; note that the tactical marking also appears on the side of the built-up wooden body. The low numbered license plate indicates that this truck was one of the original batch of



vehicles assigned to the division in 1940. The fourth photo

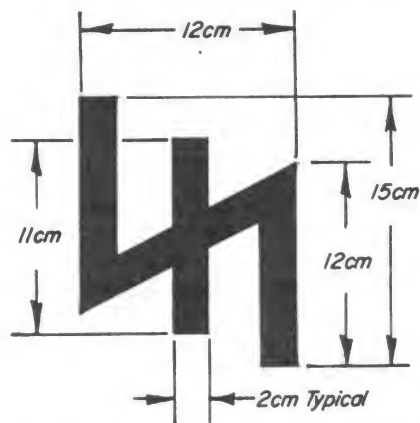


illustrates several Volkswagen Schwimmwagen's of the divisional SS-Aufklärungs-Abteilung 3., photographed on the Eastern Front during the summer of 1943. This photo clearly shows the darker background around the "skull" provided for better contrast.



The "senior" Waffen-SS division was the 2. SS-Panzer-Division "Das Reich", which was formed in the winter of 1939-1940 as the SS-Verfügungs-Division. The divisional history, written by Otto Weidinger, indicates that the tactical symbol for the division was created in early 1941. At that time, Otto Weidinger was the divisional adjutant, and he was present when the emblem was chosen. SS-Obergruppenführer Paul Hausser, the division commander, removed his "Totenkopf" ring and selected the emblem from one on the ring's sides. In March 1941, this tactical symbol, designated as the "Kampfrune", was ordered to be displayed on the unit vehicles, and the sketch at the top of the next column shows the form and dimensions of the "Kampfrune", taken from the original order.

The first "showing" of this new symbol took place during the Balkans campaign, and several photos show the "Kampfrune" painted on fenders of Sd. Kfz. 222 armored cars in gold-yellow. Most of the photographs that clearly show the tactical marking were taken during the early days of the Russian invasion, when the Kriegsbericht-Zug (War Reporter Platoon) was active in propaganda



*Tactical Symbol Dimensions - "Kampfrune" of SS-Division (mot.) "Das Reich"; taken from an original document dated 13 March 1941*

photography for newspapers. The photograph below shows an observation post for one of the divisional artillery batteries during the advance into Russia. The "Kampfrune" appears on the rear of the m. Pkw. (medium car) on the right, immediately above the letter "G" (standing for Guderian). Note that the letter "G" appears in white and the "Kampfrune" appears in gold-yellow. On the motorcycles (used by the battery's messenger section), the divisional symbol was painted in gold-yellow at the front edge of the front fender, just in front of the license plate.

It does not appear that all of the divisional vehicles carried the "Kampfrune" in gold-yellow (referred to in German as "citronen-gelb"); in some photos, both the letter "G" and the "Kampfrune" were painted in white, and this might possibly be due to a lack of the proper yellow paint. White paint would be much more common, as it was used to re-touch license plates and to apply the white edging to the fenders, used for night blackout driving.

Continued on Page 36





# THE U.S. ARMY'S M-548 TRACKED CARGO CARRIER

## Part 2 Missile Versions

by David R. Haugh



Two different missile-carrying anti-aircraft vehicles have been constructed around the chassis of the M548 Cargo Carrier. The first such conversion, shown above, was designed to carry (and launch) three "Hawk" surface-to-air guided missiles; the vehicle is designated as the XM727. As can be seen in the accompanying photos, the modifications to the base M548 are quite simple; in addition to the deletion of the cargo area, which holds the launching equipment and missile mounts, a blast deflector shield is installed over the rear of the cab to protect the crew and basic vehicle. The missiles are carried in the middle of the cargo area during transport and the launching apparatus is slid to the rear when being readied for firing. On the march, each XM727 doubles as a tractor to pull trailers containing the missile battery's radar and control rooms; three XM727's make up the battery's firing section.

The second missile-carrying version of the M548 Cargo Carrier is the XM730 "Chaparral" Missile Carrier. In this version, four of the "Chaparral" guided weapons (which are based on the U.S. Navy's Sidewinder IC missile) are mounted around a powered, demountable turret, which sits on the former cargo area. Modifications to the basic M548 in this version are mostly confined to the cargo area.

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Photo Above: One of the first XM727 "Hawk" Missile Launchers with unmodified cab, shown at the manufacturer prior to the installation of the blast shield and the missile launcher in the cargo area. Note the storage of the on-vehicle tools and the winch, which are standard from the M548 Cargo Carrier. This vehicle shows the "hard-top" cab.

(Photo Credit: FMC Corporation)

Right: The same machine as shown on the opposite page, after installation of the blast shield and launcher. The caption in the upper right corner of the photo comes from a company newspaper.

(Photo: FMC Corp.)



## DELIVER HAWK CARRIERS



Left: Another early XM727, towing a trailer with the acquisition radar. Three XM727's make-up the firing section of the Battery. This photo appears to have been taken at Camp Roberts, Calif. during testing by the CDEC.

(Photo: U.S. Army)

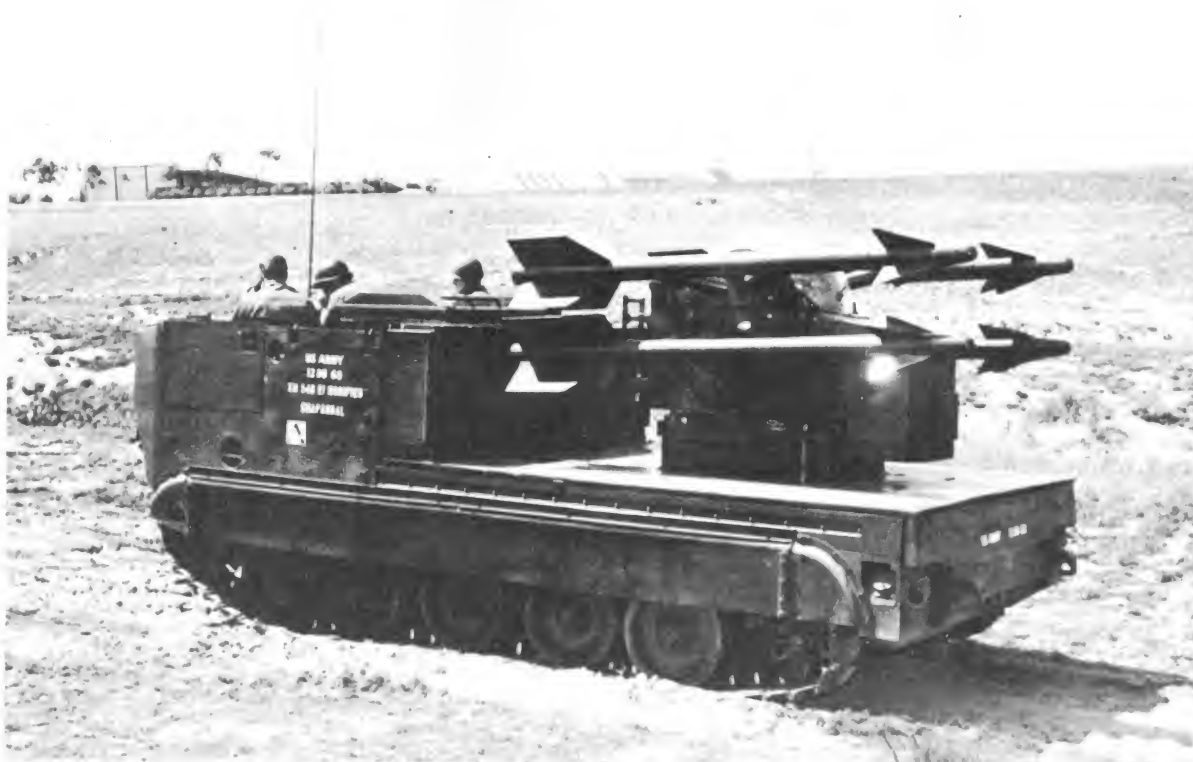
Right: An early XM727 with much modified M548 chassis, and fold-down driver's compartment. In this photo, the launcher is towing the trailer-mounted radar unit; this is a common vehicular expedient in the XM 727 Battery, while "on the march".

(Photo: U.S. Army)





The XM730 Chaparral missile carrier uses a standard M548 chassis with most modifications being limited to the rear cargo area, which is modified for mounting of the launcher and mount, and hinging blast shields are used to protect the engine and crew compartments during firing. A fabric cover spread on bows over the cargo area of the vehicle during movement prevents identification of the missile system. (Photo: FMC Corp.)



This photo shows the prototype XM730 while undergoing testing at the Naval Ordnance Test Station, China Lake, California. The Chaparral is designed to protect forward-area Army forces against low altitude air attack; the missile operates on an infrared heat-seeking principle. (Photo: U.S. Army)



GENERAL ARRANGEMENT  
DRAWINGS

# M-548 CARGO CARRIER

DRAWN BY: J. STEUARD

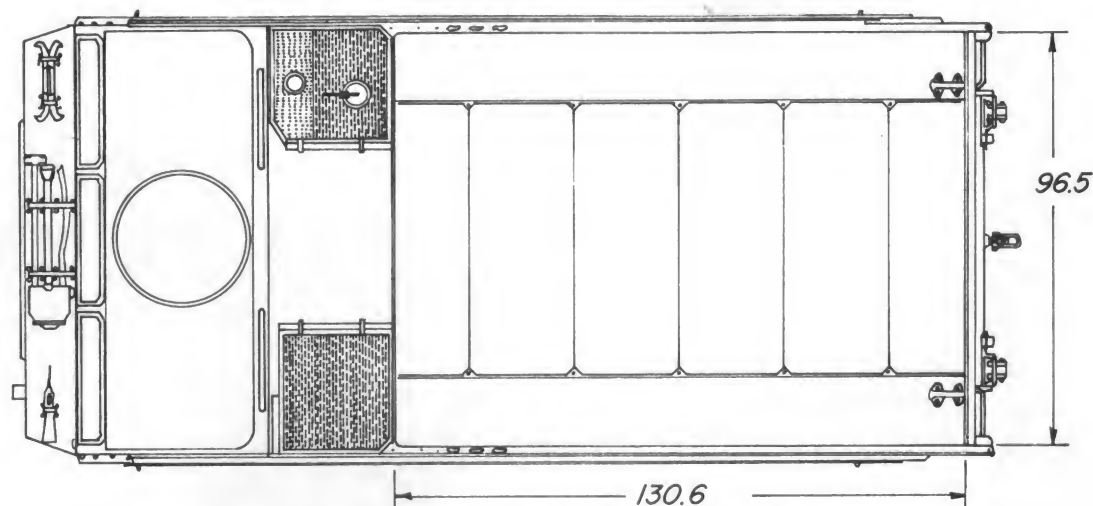
Manufacturer: Food Machinery Corporation,  
San Jose, Calif.

Power Plant: GMC 6V53 Diesel Engine

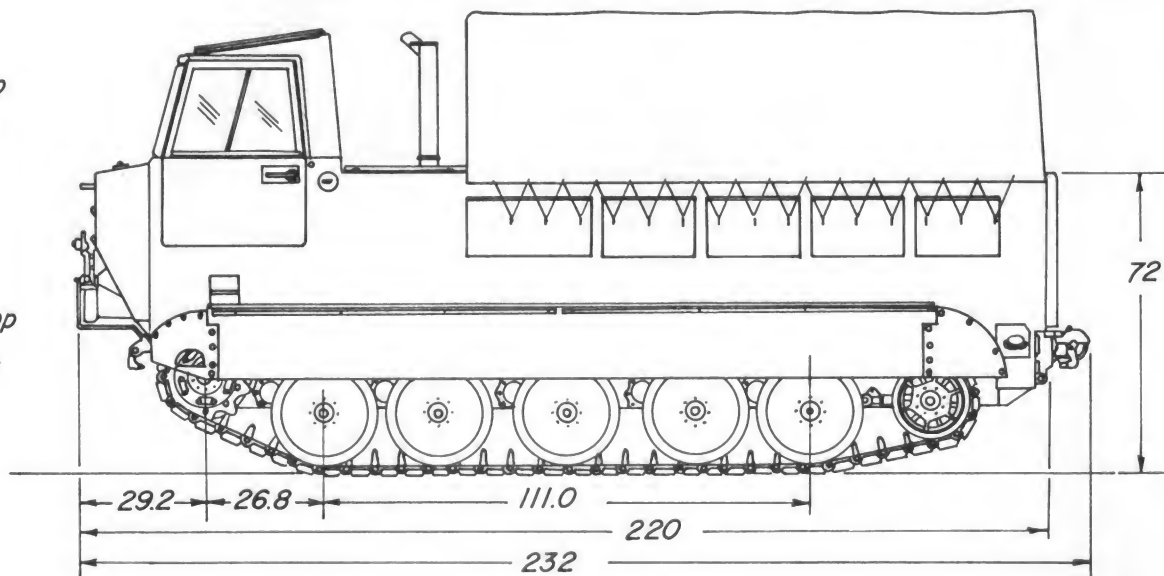
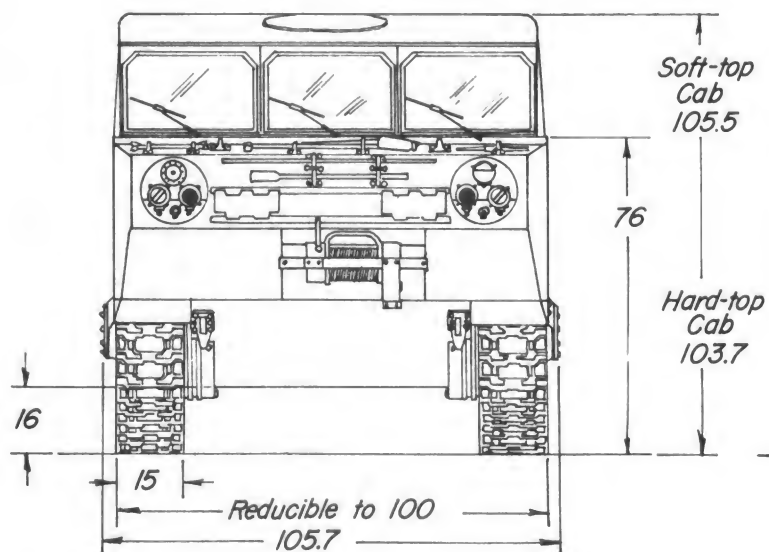
Transmission: Allison TX-100

0 1 2 3 4 5 6 7 8 9 10  
Bar Scale in Feet

Dimensions given in inches.



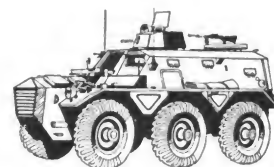
Note: Canvas Cargo Cover omitted in Top View



# ARMOR IN PICTURES

"Armor in Pictures" is a photographic-article series to display reader-submitted material on military vehicles and associated models or dioramas. Readers are invited to submit their photographs of vehicles for inclusion in this series. Photos should be packed securely, preferably between sheets of cardboard, to prevent folding, and sent to AFV-G2, P. O. Box 293, La Puente, CA 91747, Attn: "Armor in Pictures". Credit will be given in the photo caption for all photos published and all photos will be returned after publication, along with a copy of the magazine in which the pictures appear.

"Armor in Pictures" is also designed to serve readers as a forum for photo requests. If there's a particular photo reference needed, for modeling, for data, for accurate markings, etc., drop AFV-G2 a note (at the above address) to let the staff know what is required. Our staff will attempt to provide the photos that the readers wish to see, and we'll also provide a list of requested photos that readers are searching for.



At left: An unusual photo of Soviet BM-13 Rocket Launchers mounted on what appears to be U.S. made, lend-lease, Chevrolet Cab-over-engine (COE) 4x4 175-inch wheel-base trucks. Note that the nearest vehicle does not have a blast deflector on the cab roof. These photos were taken on 2 May 1945 at a location only 271 kilometers from Berlin. Reference: Zotnierz Polski (Soldier of Poland), 9 May 1971, page 7. ©

At right: Another photo of Soviet BM-13 Rocket Launchers mounted on COE 4x4 trucks. Note the blast deflector mounted over the truck's cab. This photo clearly shows the size of the rockets being loaded for firing. These photos are from the J. W. Loop collection. ©



- 16 -

Appearing at the right (inside the rectangle) is the answer to last issue's unknown vehicle "quiz". Answers were provided by J. W. Loop and Col. Robt. J. Icks, Ret'd. (answers received prior to the printing of this issue) If sufficient readers are interested in this type of "Identification Quiz", please let us know so that we can make plans for unknown vehicle photographs in future issues. . . . If you're "stumped" on a photo in your collection, let us publish it in this ID. ➡



In the immediate post-World War II. period, the US Army Ordnance Center at Aberdeen Proving Ground, Maryland used two German Mercedes-Benz automobiles as staff officer vehicles. These two cars are pictured above; the convertible coupe on the right appears to be a Type 500, while the four-door convertible on the left seems to be a Type 770. The bumper markings "HQ-1" and "HQ-2" can be seen painted on the front bumpers of both automobiles. More information is desired on these vehicles: what happened to them, and how long were they in use at Aberdeen?

Photo: Copyright J. A. Loop

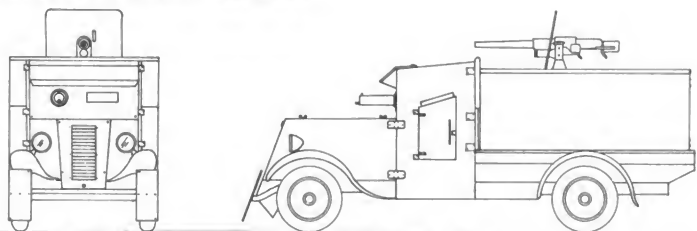


The above two photographs illustrate a model of a Panzer III, Ausführung J in 1:35th scale, constructed by Michael J. Steinke of Fountain Valley, California. This particular model won a first-place trophy in the December 1972 model contest of IPMS Orange County, and Mr. Steinke's photography shows-off the model's details to good advantage.

Here's another un-identified vehicle! This photo was provided by one of our regular authors, Wayne Larson. Wayne states that "the vehicle is quite possibly British or Commonwealth" and he'd appreciate any help in identification..... ➡



#### UNKNOWN VEHICLE ANSWER:



**SWEDISH Mod.31 Light Armored Car**

Crew: 6, Weapons: 1- 37mm gun, 1- MG, 2- Machine Pistols, Armor: 5.5mm, Weight: 4-tons, Speed: 60 km.p.h., Length: 5.4m, Width: 1.8m, Height: 2.75m, Photo appears to be of a later version than is shown in drawing; vehicle was used through World War II. by neutral Sweden to patrol it's borders.....





The following books are in English, having been translated from original Russian publications by agencies of the US government. All publications listed are approved for release to the public and are for sale to the general public through:

National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22151

Phone orders (703) 321-8543 or 321-8500 for in-person pickup. On mail orders, allow four to six weeks for delivery. Documents not in stock will be reproduced from microfilm on white paper, and will take about two extra weeks.

1. JPRS 56726: Concise Handbook of Soviet Motor Vehicles and Trailers, by D. V. Chaban (Translated 9 August 1972), 239 pages, \$3.00

This book was originally published by the Military Publishing House, USSR Ministry of Defense in 1971. It contains complete specifications for military motor vehicles (soft-skin only) produced by the Soviet motor vehicle industry as of 1969, as well as models no longer in production but which are still in operation in large numbers. A drawing of the basic vehicle, about 38 specific major specifications and a list of variants (from the basic model) are given for each vehicle and trailer listed in the publication.

2. AD 748872: Concise Automotive Manual, (Translated 14 August 1972) 429 pages, \$3.75

This book was originally published by the State Scientific Research Institute of Automotive Transportation, Transportation Publishing House in 1971. Similar to the above described document, this book covers all civilian automobiles, trucks and trailers, to include some but not all military vehicles (of the soft-skin type) produced in the USSR during the 1966-69 period. Information contained includes a photo, two view drawing and technical information on most of the 141 basic vehicles listed, broken-down into: passenger cars, buses, commercial vehicles, truck tractors, dump trucks, cross-country vehicles, general purpose trailers and semi-trailers, specialized vehicles (ie. fuel trucks and trailers, pole trailers, etc.). Special tables with photographs cover vehicles manufactured from 1908-45 and 1945-67. A total of 58 tables and 253 illustrations make up the book.

Note: When used together, JPRS 56726 and AD 748872 makes-up a fantastic collection of technical information about Soviet soft-skinned vehicles. These two books should be ordered as a combination.

Above information and reviews by J. W. Loop

Book Review: The Valentine in North Africa, by Bryan Perrett (Ian Allen, London, England, 1972) \$4.90

Review by William Platz

Contrary to what the title may indicate, this is not a history of the Valentine tank, but the history of a particular unit - the British 23rd Armoured Brigade. Copiously illustrated with a fine collection of unusual photographs, the book covers this brigade's operations from July 1942 to May 1943 in the critical battles of the desert war. The research behind the book is quite good, and despite the short length (of only 80 pages), there are numerous first-hand accounts of the principal battles. Of particular interest are the descriptions of the confused fighting of the July battles around the Alamein defenses.

- Continued on Page 36 -

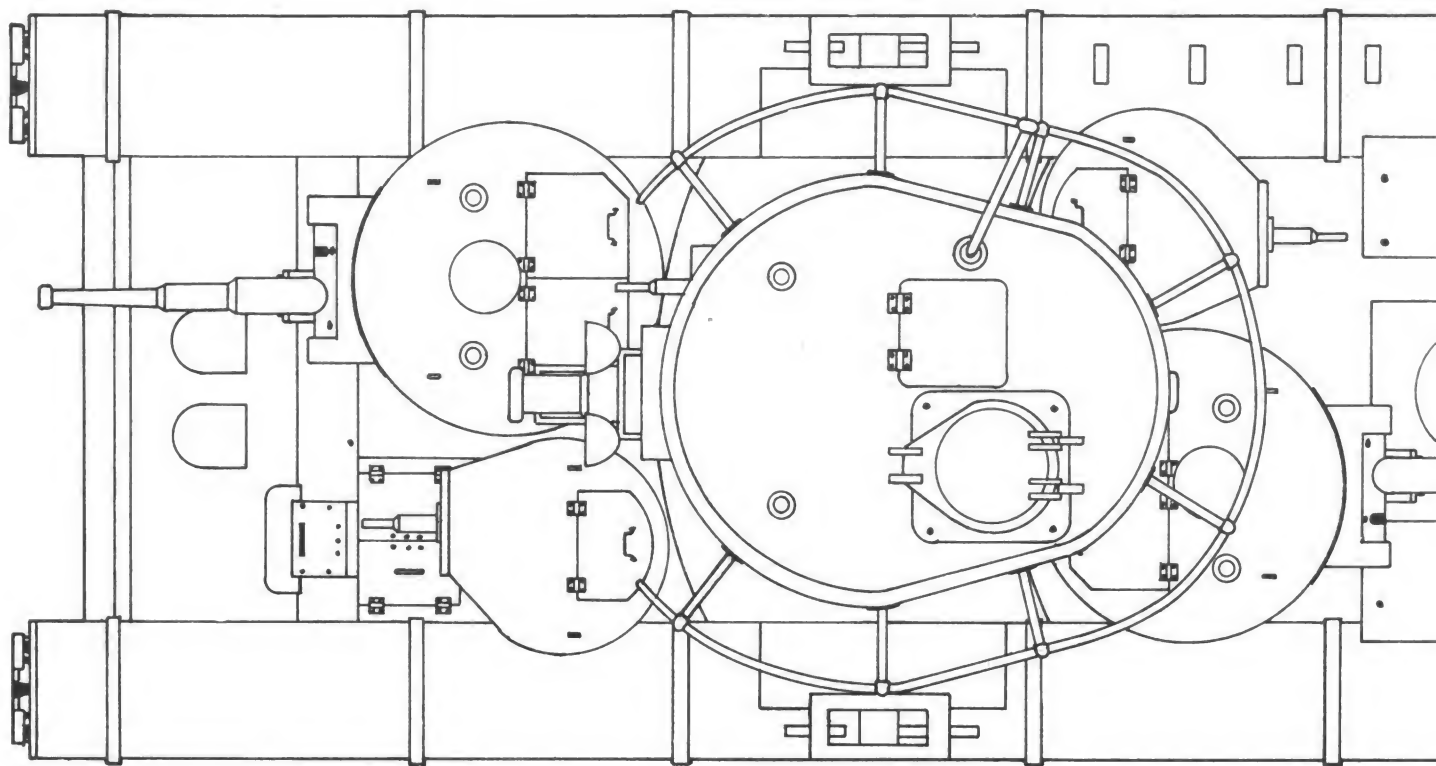
# The Russian T-35 Heavy Tank

by Wayne Larson

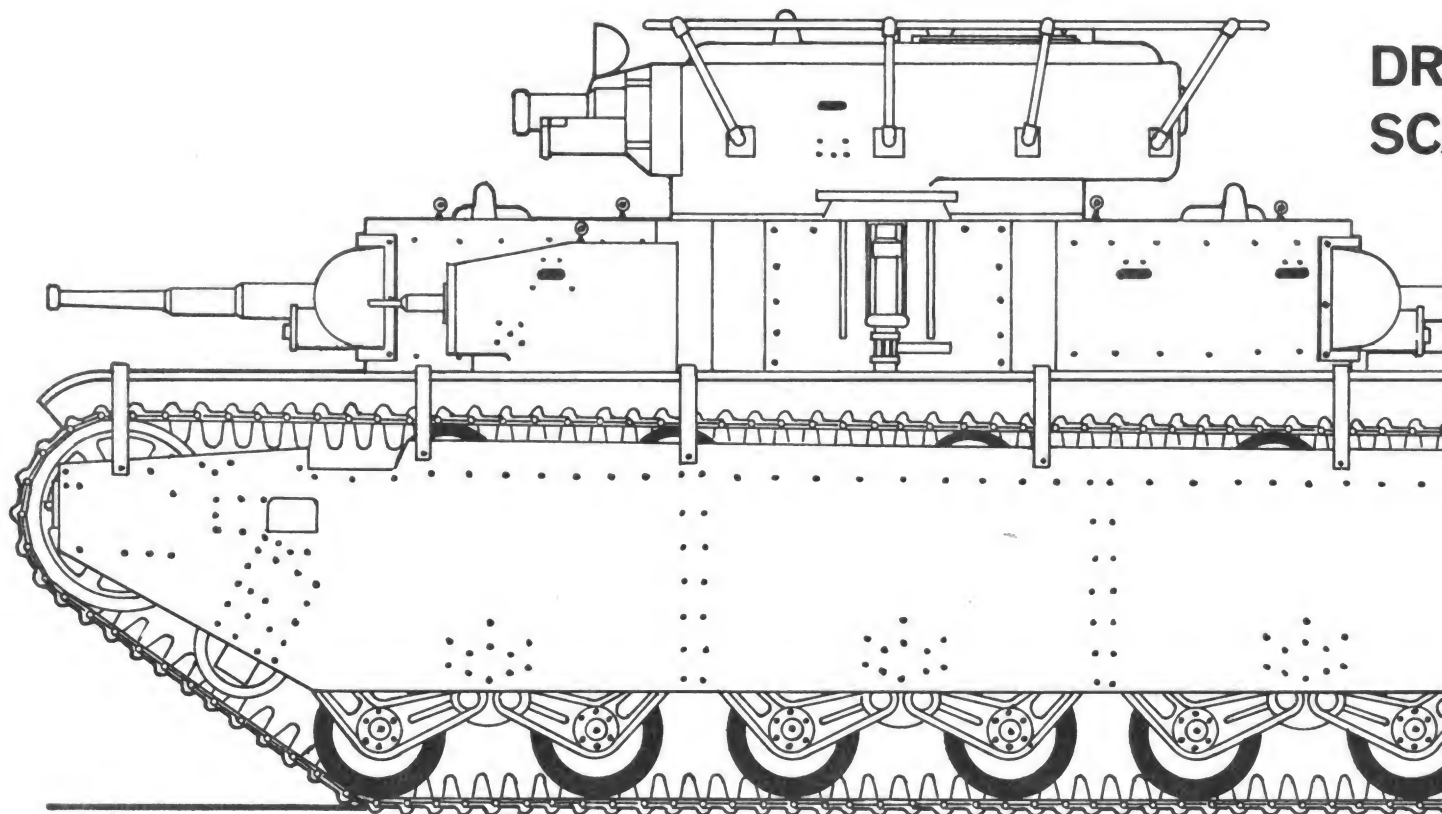
The story of the creation of multiple-turreted, heavy and cumbersome "landships" is a curious mixture of naval concepts, dating back to the very conception of armored vehicles. In their early stages, armored fighting vehicles were viewed as being similar to naval ships, containing "crews", armed with multiple weapons and traveling over the land as ships moved on the water. Intriguingly, this "landship" naval concept, in its wildest ramifications, found a place and drew parallels with most fighting naval vessels; the light, fast "cavalry" tanks were compared to the destroyers, the medium-gunned slower tanks (often armed with short-barreled "support" howitzers) were compared to the navy's cruisers, and the multiple-turret monsters (such as the Russian T35) became the land "battleships". These similarities received some exposure to the press of the time, and consequently this somewhat distorted viewpoint hung-around until World War II. Various countries, including Great Britain, the United States, France and Germany (as well as Russia), all explored the multiple-turret "landship" concept, and most dropped the idea for various well-founded reasons. First, terrain irregularities (such as ditches, rivers and trees) created mobility problems that were impossible for the naval thinkers to comprehend. In reality, the only comparison of terrain with the ocean that was valid was that of the flat, featureless plains of the Soviet Union, and even this analogy is suspect, for ships floated "in" water and not "on top" of it.....Secondly, the heavier, larger vehicles, when adequately and effectively armored, weighed so much that their mobility was severely impaired, even on hard, level terrain. In addition, the multiple-turreted armored were exposed as ridiculous when land tacticians tested the vehicles in mock battles or skirmishes against lighter vehicles with equivocal armament; the turrets lacked visibility and could not rotate in a sufficient arc to engage a fast moving target. Thus, by the eve of the Second World War, the ultra-heavy, multi-turreted tank (or "landship") was on its way out of existence.

One of the very few of these "monster" vehicles to see any form of combat was the Soviet Russian T35 Heavy Tank, shown in drawings on the following pages. The T35 first appeared in 1933 as an evolution of the T32, to which it was very similar in armament and layout. Weighing close to 50 tons when fully-loaded, the T35's armor was still too thin to escape penetration by a 37mm gun (the standard anti-tank gun of the time). Initial models of the tank were constructed of riveted plate and there was virtually no attempt made to slope any of the plates to obtain greater effective thickness. Thus, though labeled as a "breakthrough" tank, the vehicle was unable to withstand the standard enemy guns of the period! Even though powered by a robust engine of 500 horsepower (a modified Hispano-Suiza V-12), the vehicle was badly underpowered, and it was so large that it was very un-maneuverable to say the least. The crew of ten manned five turrets; the main, 360° traverse turret accommodated a low-velocity 76.2mm howitzer that was totally inadequate in performance against any but infantry type targets. Two of the remaining turrets (one at the right front and the other at the left rear) mounted anti-tank weapons (initially of 37mm caliber, changed to 45mm in 1935) but their traverse was limited and the T35 had areas blind against enemy tank attack. The remaining turrets mounted anti-infantry machine guns. Some (but not all) of the vehicles carried communications equipment; these vehicles could be easily recognized by the tubular, frame-like antennas surrounding the central turret.

When used in combat against the courageous Finns during the Winter War, the few T35's that were in use did not long survive. The thickly wooded, swampy Finnish landscape was totally against the attacking armor (it was better than the Finnish anti-tank defenses) and numerous Soviet tanks were defeated by large boulders, conveniently placed in front of the tanks by the enemy infantry! The thick woods limited the visibility from the turrets, and the snow-caped Finns could (and did) approach the vehicles undetected until their flaming bottles of gasoline exploded on the turrets of the tanks. Some tanks had their thin turret armor pierced by Finnish anti-tank gun crews, firing two man 20mm weapons! When the smoke of war ended, the Finns were defeated by a superior enemy who lost tremendous numbers of men and weapons. It is said that the Russians learned from the Finnish War.....and probably the greatest lesson that they learned in the field of armored vehicles was to give-up the concept of the "land battleship" and to concentrate instead on lighter, faster and more powerfully armed tanks, such as the T34.

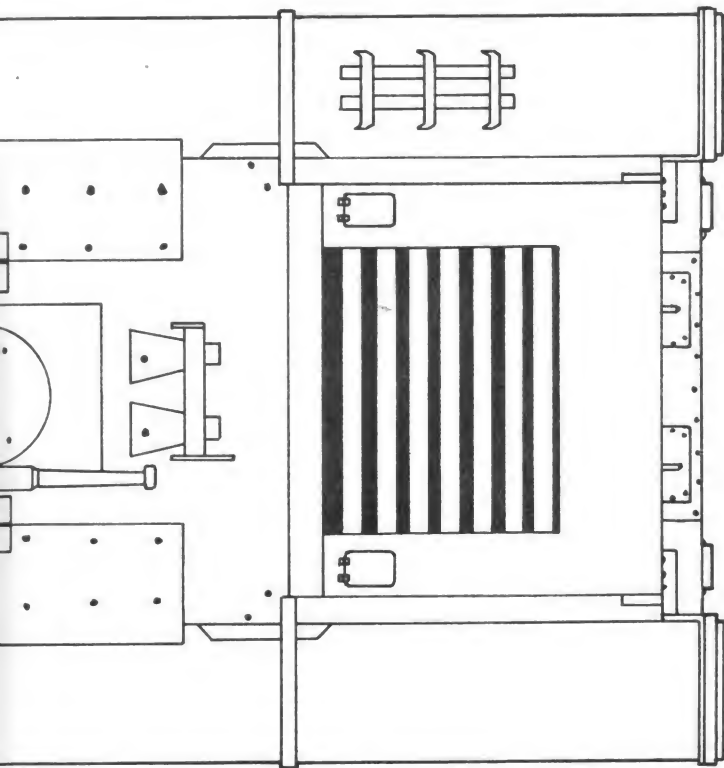


# The Russian T-35 Heavy Tank

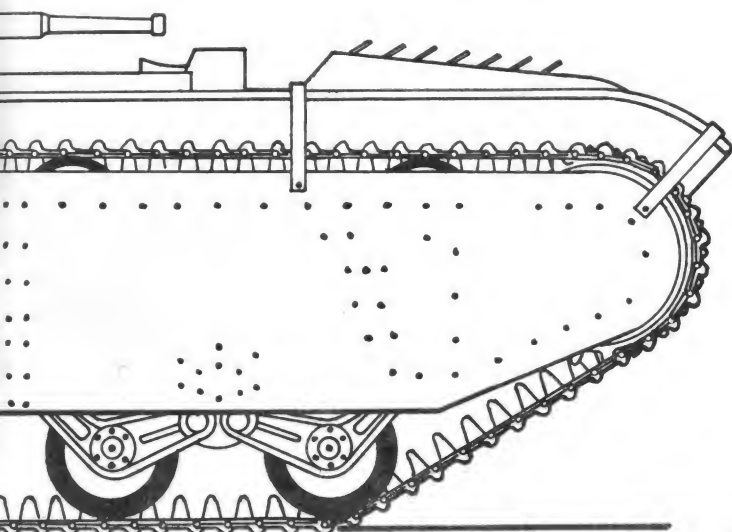


DR  
SC





WN BY: STEVEN R. COBB  
 LE: 1/32 (3/8"=1'-0")



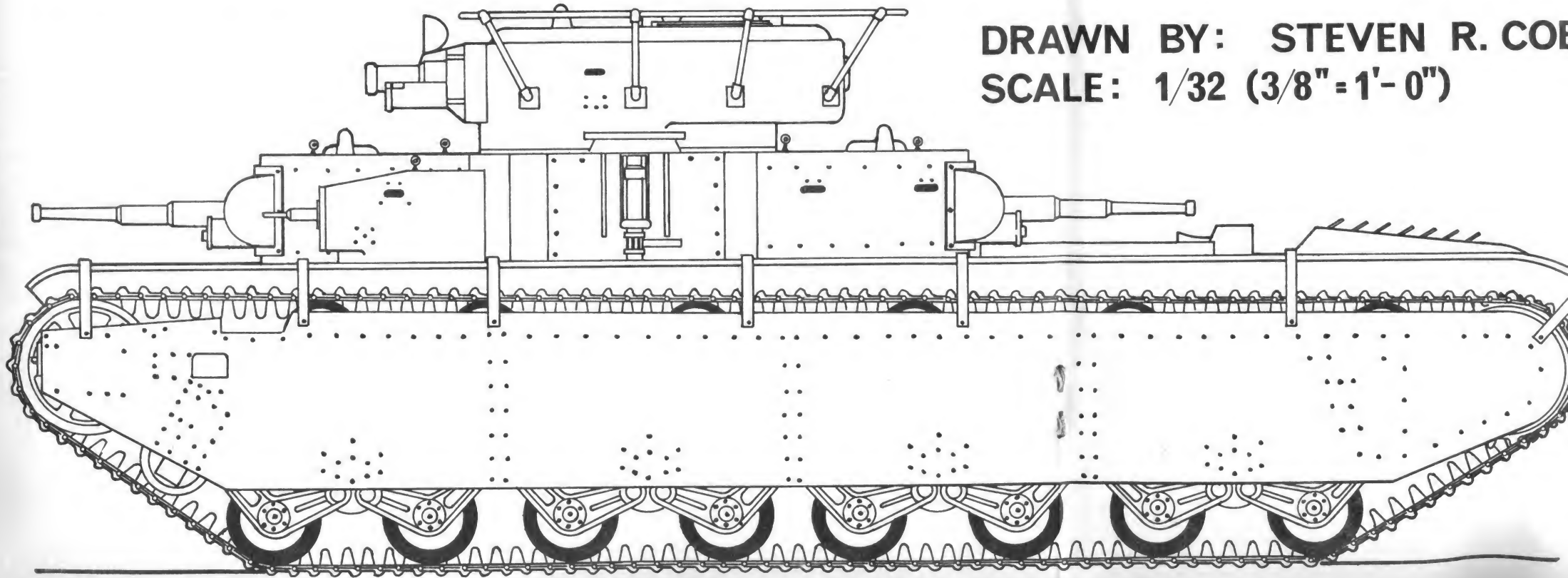
## Data Table: T35- 2nd Mod.

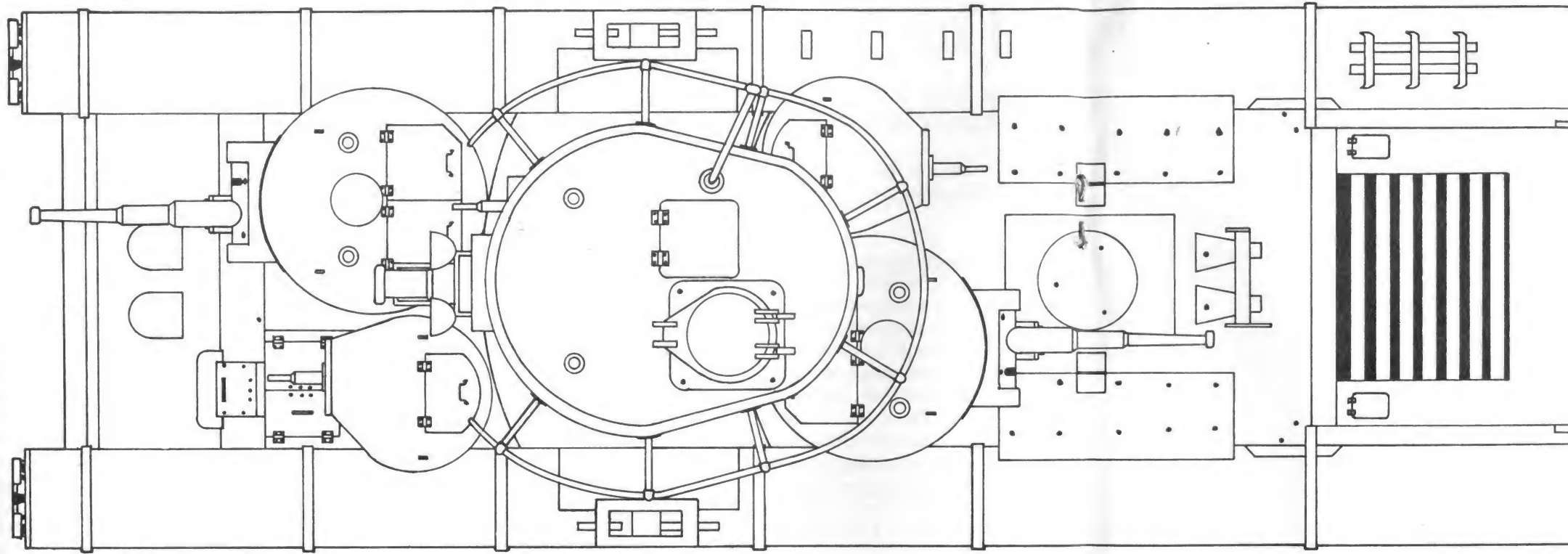
Crew	Ten (10)
Weight	45 Tons
Length, Overall	31'- 5"
Length, excluding Gun(s)	31'- 5"
Width, Overall	10'- 4"
Track Centers	9'- 2"
Height, Overall	11'- 1"
Ground Clearance	1'- 8"
Ground Contact	26'- 1"
Maximum Speed, Road	19 mph.
Cross country	12 mph.
Cruising	14 mph.
Fuel Capacity	130 gal.
Range, Road	94 miles
Cross country	50 miles
Power-to-Weight Ratio	11:1
Ground Pressure	10.2 lbs./sq. in.
Trench Crossing	15'- 1"
Vertical Step	3'- 9"
Grade Climbing Ability	35°
Fording	3'- 10"
Engine, Model	M-17M
Type	12 cyl. "V" (Gas)
Output	500 hp/2200 rpm
Coolant	Water
Transmission	Sliding Gear
Gears	4 Forward - 1 Reverse
Steering	Clutch & Brake
Tracks, Width	12.2"
Pitch	6.8"
Wheels per Side	8, grouped in pairs
Armament, Main	76.2 mm, L/16
Secondary	(2) 45mm
Auxiliary	(6) 7.62 mm DT MG's
Traverse, Main Gun	360°
Elevation, Main Gun	-5° to 25°
Ammunition, Main	90
Secondary	220
Auxiliary	10,000
Communications	Radio
Armor, Turret	11-35mm
Hull, Side	25mm
Hull, Front	35mm
Hull, Rear	20mm
Hull, Floor	11mm
Hull, Roof	14mm
Skirting	10mm

Drawings Cont'd on Next Page

# The Russian T-35 Heavy Tank

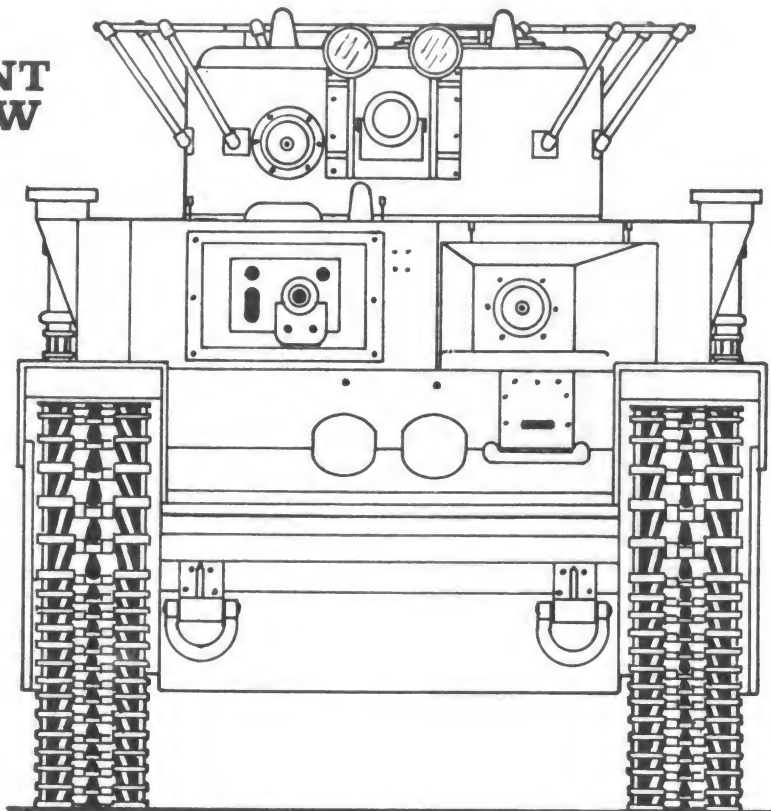
**DRAWN BY: STEVEN R. COE**  
**SCALE: 1/32 (3/8" = 1'-0")**



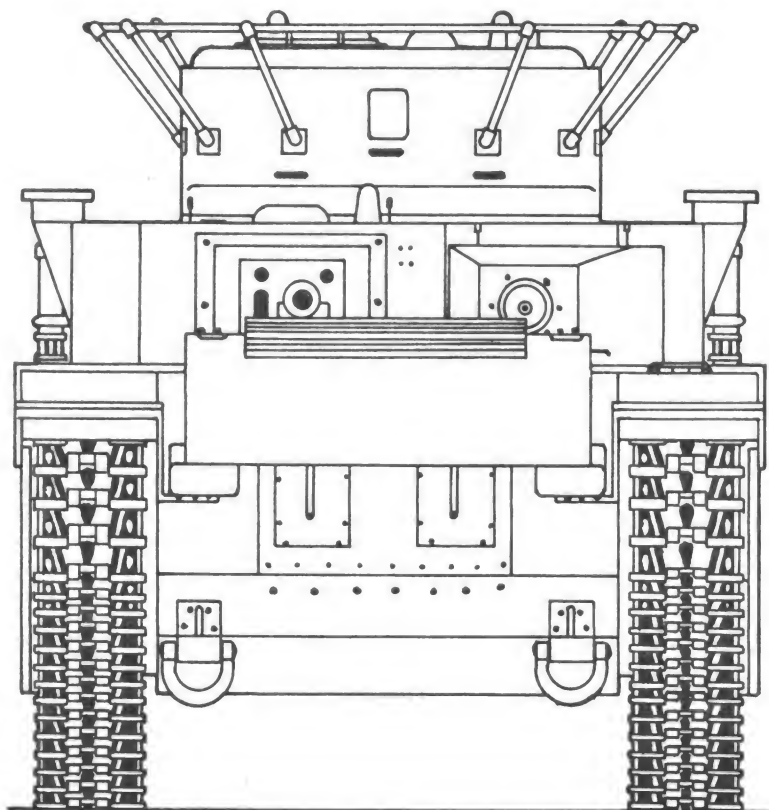


**The Russian T-35 Heavy Tank**

**FRONT  
VIEW**



**RUSSIAN T35  
Heavy Tank  
(Continued)**



**REAR  
VIEW**



# PHOTO EPILOG:

As a "Photo Epilog" of last issue's center spread drawings, here are eight photos of one of the few remaining Japanese Type 95 "Kyu-Go" Light Tanks. This vehicle is on display at Schofield Barracks on Oahu of the Hawaiian Islands. The original tank 6.5mm machine guns have been replaced by welded .50 caliber MG barrels, but otherwise the details of the tank are correct, and these photos should help in modeling the vehicle. Photos by J. A. Loop ©



# ARMOR in BERLIN

- 24 -

by CPT DWIGHT McLEMORE



While standing as the political hub for diplomatic maneuvering on the European continent, Berlin also serves as a display board for the armor of the forces stationed there. On June 17th of each year, allied forces participate in the Allied Forces Day Parade; on this occasion the British, French and American armor units of West Berlin spend considerable time painting and polishing their tanks for this yearly debut to the world. On the other side of the wall, Soviet and East German units duplicate this annual fete with their May Day parade.

Photo Captions: This Page, Top: The CO of Company F, 40th Armor (Capt. Jack Crumley) dips his main gun in a salute as the main American armor unit in Berlin passes the reviewing stand. These photographs were taken at the annual fete in 1971 by the author.



Center Photo: Company F, 40th Armor's M60A1's roll past the reviewing stand. Berlin citizens generally line the parade route to cheer the Allied armor; "their Panzers".....

Bottom Photo: The then obsolete 105mm self-propelled gun used by Battery C of the 194th Artillery in Berlin. Allied units in Berlin are generally combinations of armor, infantry and artillery which function as self-contained battle groups.....



Photo Captions: Opposite Page, Top: British Centurions of the Royal Tank Regiment. Note how the light reflects from the highly polished surfaces of the tanks.....

Center Photo: Ferret Scout Cars used by the British in Berlin. This unit occupies the same Kaserne as the British tank unit; note that the Unit Serial Number is different from those on the Centurions.....

Bottom Photo: French AMX-30 medium tanks from an experimental unit in West Germany. This unit rail-loaded and moved to Berlin for participation in this parade (June 1971). The regular French unit stationed in Berlin at this time used AMX-13 light tanks....





# INDIAN ARMY RECONNAISSANCE REGIMENT HEADQUARTERS

by William Platz

The outstanding defect of Commonwealth Reconnaissance formations during the early days of World War II. was their lack of any capabilities other than information gathering. This was particularly true of the British and South African Armoured Car Regiments; but it also applied to the "Motor Cavalry" Regiments of the Indian Army employed as divisional cavalry. These latter units were basically infantry mounted in 15 cwt. (3/4-ton - Ed.) trucks and a few Bren carriers; and, as such, were a bit more versatile than their colleagues. Nevertheless, their lack of adequate heavy weapons and manpower often proved to be an embarrassment.

With the conclusion of the North African Campaign in 1943, major changes were made in Allied organization - among these was a restructuring of the various types of reconnaissance units. Generally, this involved the addition of a variety of new weapons and vehicle types with the aim of making the new units more independent and flexible. In the case of the Indian divisional cavalry regiments, this also called for a substantial increase in personnel and a change in title - from Motor Cavalry Regiment to Reconnaissance Regiment.

Under the new establishment, the Reconnaissance Regiment consisted of three Reconnaissance Squadrons, a Headquarters Squadron with administrative and supporting troops, and a Reconnaissance Regimental Headquarters. The authorized complement was set at 22 Officers (British), 26 Viceroy Commissioned Officers (VCO's), 43 Dafadars (Sergeants), 67 Lance-Dafadars (Corporals), 14 clerks, and 418 Sowars (Private Soldiers). There were additionally 32 non-combatants with the regiment, including a Medical Officer, two Armourers, two bootmakers, one tailor, four barbers, ten cooks and twelve sweepers. One Dafadar and three Sowars were assigned as Trumpet Major and Trumpeters. The total ration strength thus totalled 622 officers and men.

Tactical control of the regiment was exercised by a small headquarters. This consisted of a Security Section, a Signals Section and a Command Element, with a total complement of 35 officers and men. The Command Element was based around the two Humber Mk. IV. Armoured Cars - one for the Commanding Officer and the other for the Second-in-Command. The Mk. IV. was the final development of the Humber series and mounted a 37mm gun and Browning .30 caliber machine gun. Both cars were equipped with Number 19 Wireless sets for communications with the other elements of the regiment. The Commanding Officer, a British Lt. Colonel seconded to the Indian Army, was also provided with an Austin 2-seater automobile for use as transportation when an armoured car would not be appropriate. Three "Jeeps" provided transport for the other key personnel, and two motorcycle dispatch riders were attached for internal communications duties.

The Regimental Signals Section was equipped with two 15 cwt. trucks with the special Wireless Office mounted. Each was fitted with Number 19 Wireless sets which could be netted-in with the rest of the regiment or tied-in with the higher formations. The trucks themselves were generally the Morris 15 cwt. (FFW); however, a number of other makes with similar characteristics were also interchangeably employed.

The last element of the Headquarters was the Security Section. Mounted in three White M3A1 Scout Cars, the section was armed with one Bren Light Machine Gun and a Projector Infantry Anti-Tank (PIAT for short) as well as its rifles. This section provided close-in infantry defense for the Regimental Command Post.

Tactically, the Regimental Headquarters was accompanied by the Administrative Echelon of the three Reconnaissance Squadrons (see AFV-G2, Vol. 4, No. 2) and by the Headquarters Squadron (to be covered in a future article). In the Italian campaign, a central control of the far-flung squadrons was virtually impossible, and the R.H.Q. generally restricted itself to administrative duties and the allocation of the heavier support weapons of the Headquarters Squadron to the other components of the regiment.

The success of the new system of organization can be readily seen from the varied roles these units performed during the Italian campaign. For example, the Central Indian Horse, which acted as the Reconnaissance Regiment for both the 4th and 10th Indian Divisions during the campaign was frequently called-on to hold a sector of the front lines as infantry, in addition to performing the conventional role of intelligence gathering.



# Indian Infantry Division

## Reconnaissance Regiment HQ

### COMMAND SECTION



1 Major 2nd-in-Command  
1 IOR Gunner  
1 IOR Radio Operator  
1 IOR Driver



1 IOR Gunner  
1 IOR Radio Operator  
1 IOR Driver



1 Lt.Col. Regt. Commander  
1 IOR Driver



1 Capt. Medical Off.  
1 IOR Driver

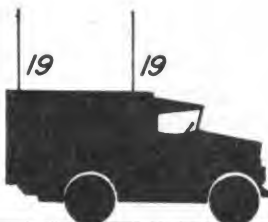


1 VCO Risaldar Major  
1 IOR Driver

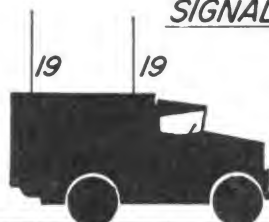


1 Capt. Adjutant  
1 IOR Driver

### SIGNALS SECTION



1 IOR Signalman  
1 IOR Driver



1 Lieut. Signals Officer  
1 IOR Signalman  
1 IOR Driver

### SECURITY SECTION



1 IOR PIAT Gunner  
2 IOR Riflemen  
1 IOR Driver



1 IOR Bren Gunner  
2 IOR Riflemen  
1 IOR Driver



1 VCO Section Commander  
1 IOR Bren Gunner  
1 IOR Riflemen  
1 IOR Driver

# COLOR 'N CAMOUFLAGE

## The M60A1 in Korea

by Dwight McLemore & James Steuard

The armored units of the 1st Battalion, 72nd Armor and the 1st Battalion, 73rd Armor, stationed in Korea, utilized (in 1971) a marking system that is different from other U. S. Army units equipped with the M60A1 medium tank. These markings are colorful and provide visual recognition of the unit displaying them. The following description should explain the individual markings.

Vehicle Paint Scheme: The M60A1's of both battalions are painted in an overall coat of standard Olive Drab lusterless paint, and readers are referred to AFV-G2, Vol. III., No. 10 for an approximation of this color. It should be stated that the exact shade (or hue) of this color varies from painter-to-painter, batch-to-batch and from tank-to-tank, and there is no guarantee that "touch-up" paint spots would match the original paint hue (which also could have faded from sun exposure). This issue's paint chip illustrates the yellow paint used for many of the markings on these M60A1's. This yellow, variously described as "Insignia" or "Chrome" yellow, should match Federal Standard 595 Color Chip No. 33538, and is matched below in Floquil colors.....

"INSIGNIA" or "CHROME" YELLOW  
FS 595 Chip No. 33538

Floquil RR 31 Reefer Yellow



Standard Markings: All tanks observed in photographs carry "standard" three-inch high lettering on the outside surfaces of both side sponson (or storage) boxes immediately below the turret ring. This lettering includes a national-identity marking ("U. S. Army") and the vehicle's registration number. Most M60A1 registration numbers appear to be in the "9B" series, although the vehicle shown on the front cover appears to be lettered "09B..." On the front of the tank, the sole standard marking consists of the vehicle's Bridge Weight Classification; this appears immediately below the driver's center periscope. The marking consists of a 4" high black number "50" centered in a 9" diameter chrome-yellow circle. Note that no white stars appear on the vehicles and that "standard unit markings" (as defined in Technical Bulletin 746-93-1) are totally absent.

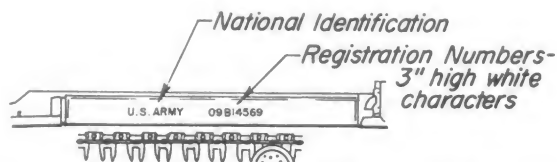
Vehicle Numbers: All vehicles in the two battalions carry an individual vehicle number on the sides of the turret and (usually) on the canvas covering over the xenon searchlight (positioned over the gun tube). These numbers identify the sub-unit assignment of the tank within the company... see the number assignment table on the next page... these numbers were always two digit numbers or a number-letter combination, and the numbers were positioned within a geometric figure on the rear of the turret sides. When the numbers were applied to the searchlight cover, it does not appear that there was a yellow background.

Vehicle numbers were painted in colors that served to identify the company of assignment, for example, the white numbers "25" on the front cover photograph shows that this particular M60A1 tank was assigned to "B" Company..... see the color coding table on the next page..... It appears that the searchlight cover number was also painted in the company-code color.....

Barrel Rings: Rings approximately 1" in width are painted around the gun tube, midway between the gun mantlet and the eccentric-mounted bore evacuator. The number of painted rings served to identify which Platoon (within the Company) that the tank was assigned to; one ring signifies the First Platoon, etc. The color of the painted ring(s) also serves to identify the vehicle's Company; for example, the two white rings around the gun tube of the M60A1 in the front cover photograph also indicates "B" Company.....

Geometric Background Shapes: As previously mentioned, the vehicle numbers appearing on the sides of the turret were painted over (or "on") chrome yellow figures which served to identify the parent battalion of the tank company. When the background figure consisted of a 24" diameter chrome-yellow circle (with the vehicle number centered on it), the tank was from the 1st Battalion, 72nd Armor. (For example, see the cover photograph.) If the geometric shape consisted of an approximate 21" sided square (with the vehicle number centered on it), the vehicle was assigned to the 1st Battalion, 73rd Armor.

While it does not appear that personal insignia, such as "names" or painted searchlight covers or other "grafitti", is permitted, the otherwise drab M60A1 medium tanks of some armor units in Korea are a little more colorful, with their multi-colored tactical insignia and vehicle numbers.....

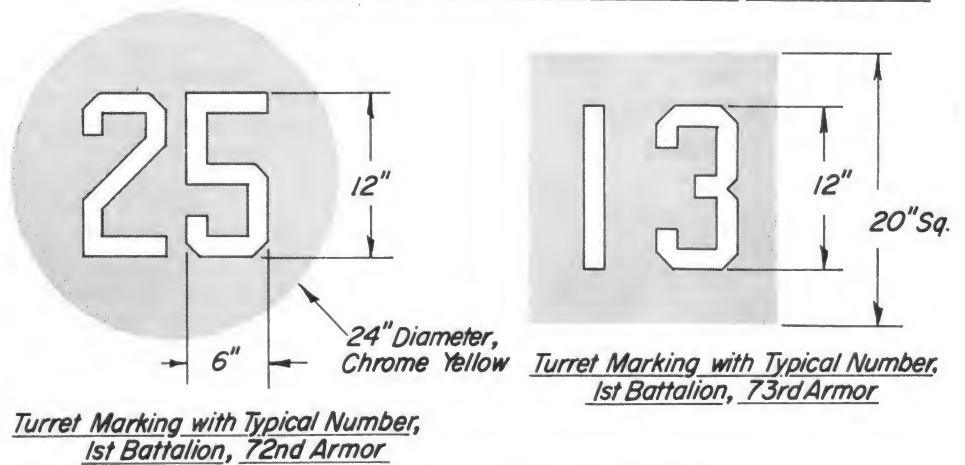
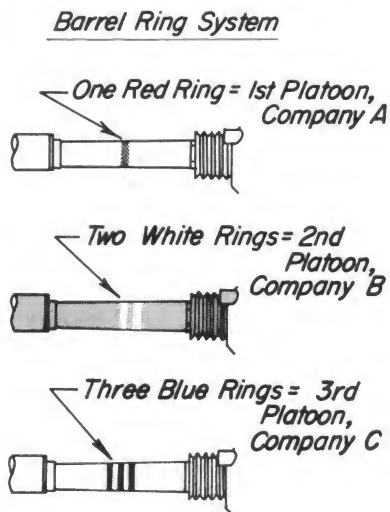
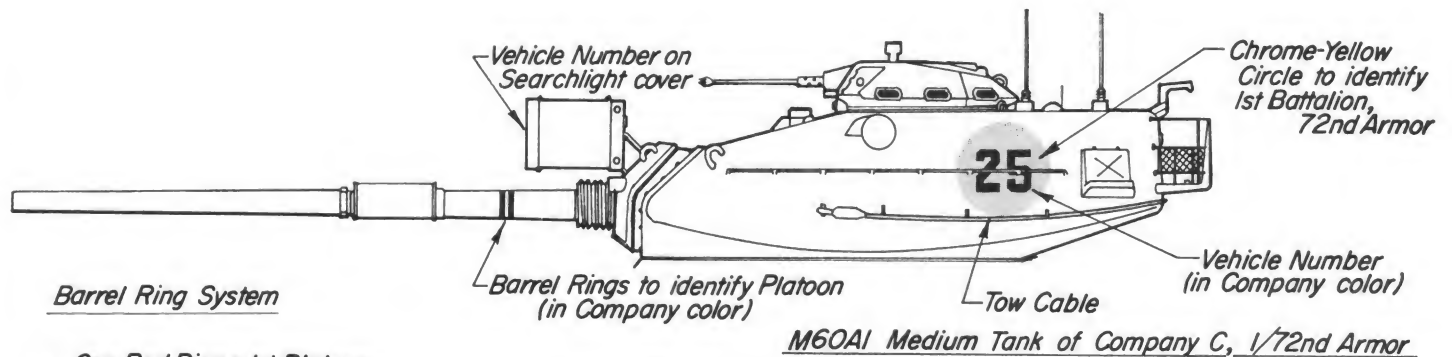
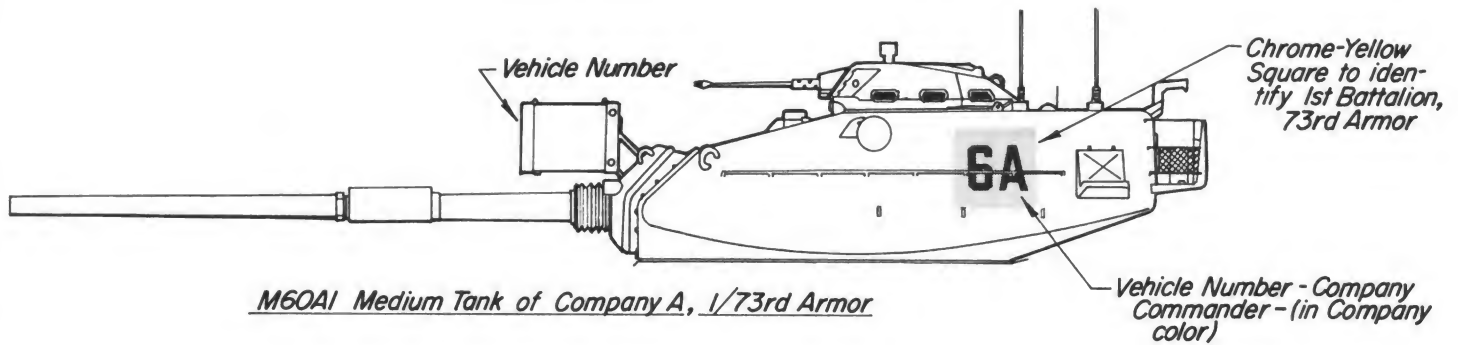


Left Side Sponson Box, showing Typical Markings

"INSIGNIA" or "CHROME" YELLOW  
FS 595 Chip No. 33538

Floquil RR 31 Reefer Yellow



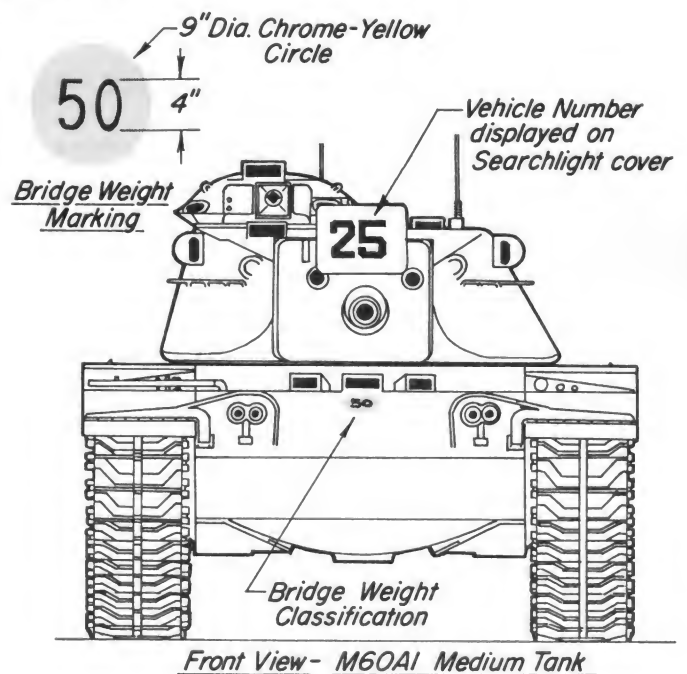


Vehicle Number Assignments

Unit	Numbers
Company Headquarters	6A, 5A
First Platoon	11, 12, 13, 14, 15
Second Platoon	21, 22, 23, 24, 25
Third Platoon	31, 32, 33, 34, 35

Company Color Codes

Unit	Color
Headquarters & Headquarters Co.	Black
Company A	Red
Company B	White
Company C	Blue
Combat Support Company	Green





# Historian's Notebook

by William Platz

"How many apples in an orange?"

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I have always been amazed at the differences in tank losses quoted for the various combatants during the North African campaign of the Second World War. The problem is not just restricted to claims of enemy vehicles destroyed. In reporting their own losses, the Germans consistently give lower figures than would be expected, while British losses nearly always seem unusually high when compared to their opponents. The reason for this is more subtle than the superiority of German technical and tactical skill - it is the differences between the two reporting systems.

A case in point: Suppose a German Panzer unit was equipped with 52 tanks on the day of the great battle of Sidi Mustafah. In the engagement, 10 tanks were totally destroyed, 5 were damaged by mines and were temporarily put-out of action, 4 were damaged by AT fire and were abandoned on the field, 6 suffered minor mechanical failures and 1 had a burned-out engine requiring overhaul. Under these circumstances, the German commanding officer would report to Panzer-Armee-Afrika a loss of ten tanks. However, a British unit identically equipped and under the same circumstances would report to Eighth Army Headquarters "26 tanks fit for action". And there lies the crux of the problem... British figures generally include damaged vehicles, while German reports, as a rule, do not.

Of course, a more complex accounting of the fate of each vehicle was subsequently recorded. In the case of the Germans, this was found in the "Schlacht-Berichte" or Battle Report which was compiled about 2 to 3 weeks after an engagement, working from the unit's notes. However, the usual sources quoted in historical accounts are taken from the tactical messages sent to higher headquarters, which contain the distortions mentioned above. Even the "Schlacht-Berichte" can be misleading... as the tanks destroyed are listed separately from those damaged and subsequently abandoned, those damaged beyond repair, and those lost to operational causes rather than in combat.

Other factors are also important when considering the reported losses. Of these, one of the hardest to assess is the state of mind of the commander making the report. Using the same example as above, an optimistic commanding officer might well include the vehicles with only minor damages as being fit for action, assuming that these could be repaired by his unit's own resources. On the other hand, a dispirited German commander might include among his losses any vehicle that was damaged severely enough to warrant being sent back to rear-area workshops.

In the matter of claims of enemy vehicles destroyed, the serious researcher must remain skeptical. Several sources do provide detailed justification for their claims, giving the methods by which the various units' claims were reconciled and relying heavily on an after-action "hull count" of destroyed vehicles. Nevertheless, such careful analysis is rare, and I can only recall three instances where the coverage has been similar. Indeed, most claims bear little relation to reality. For example, the Battle of Alam Halfa. In the early afternoon of August 31, 1942, the war in North Africa reached a climax. Around the undistinguished ridge known as Point 102, 166 British tanks met approximately 120 German Panzers and the ensuing battle resulted in the following claims by the British units involved:

Unit	Panzers Destroyed
4th County of London Yeomanry	11
Royal Scots Greys	5
5th Royal Tank Regiment	6
1st Bn, The Rifle Brigade (AT Guns)	19
Total:	41

Yet, a check of German sources reveals that only 22 tanks were lost in the encounter. For the entire period of 31 August through 6 September, Rommel admits to only a loss of 50 tanks and an 8th Army survey later recorded only 42 hulks left in the entire area.

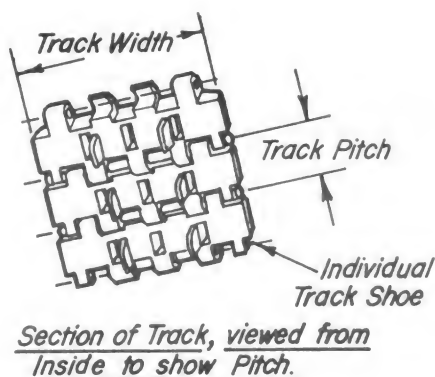
In all cases, figures given for tank or vehicle losses should be examined very carefully, and cited only with qualifications. Otherwise, you might be equating the German apples with the British oranges.....

# AFV INQUIRY

Armor Question from Readers, with  
Answers from the AFV-G2 Staff.

Question: What is meant by the term "track pitch"?

Answer: In providing an answer to this question, it is necessary to define some track terms and describe "typical" track. Track consists of a number of track "links" (or "shoes") fastened together by one or more rods referred to as "connecting pins". These pins provide pivoting points for the track to flex as it travels over the drive sprockets and idler wheels. The term "track width", of course, refers to the distance across the track; track in the 1930's was generally quite narrow, and track has progressively grown wider to provide better "floatation". (Greater track



width increases the surface area of the track bearing on the ground; this greater pressure area better distributes the vehicle's weight, providing lower ground pressure and better "floatation".) The length of a track is generally described in terms of the number of track "shoes" in a track and also the "track pitch". As shown in the drawing above, the "track pitch" is the distance between successive connecting pins, and this measurement also serves to define the length of an individual track shoe. Thus, by multiplying the "track pitch" by the number of shoes in a track, you can determine the total length of the track.....

Question: Can you provide information on the modification done to U.S. Army M4 "Sherman" tanks in the European Theater of Operations to improve the vehicle's speed by removing the engine's "governor"?

Answer: This is a most intriguing question to research. It is fairly obvious that one of the shortcomings of the M4 "Sherman" was its slow speed, and more importantly, its slow acceleration from a dead stop. In the official "U.S. Army in World War II." series titled "The Ordnance Department; On Beachhead and Battlefront", pp. 326, we found ..... "At the time of the Roer Plain offensive, ... the tankers complained that the Shermans were too slow to get quickly out of the way of anti-tank fire..."

Regarding the engine "governors", in talking with U.S. Army Ordnance personnel, we quickly found out that "removing governors" from military vehicles has been strictly "verboten" under all conditions! Since the governors were installed to prevent "over-reving" the engine and to limit excessively high r.p.m. to prevent rapid engine wear, it can be seen that governor removal would decrease engine life and create maintenance problems. While it is true that removing the governors from Sherman tanks would provide higher top speed and quicker acceleration, this would be done at a cost in engine life and reliability. It does not appear, from what we have found, that governor removal was sanctioned by the Army (in the form of a Circular or MWO), but it was probably done (very un-officially) to some extent by tankers and company-level maintenance personnel whenever they could "get away with it".....has any reader any information on this "modification".....was it "official" or un-sanctioned?

## NEW-AT WALTHERS

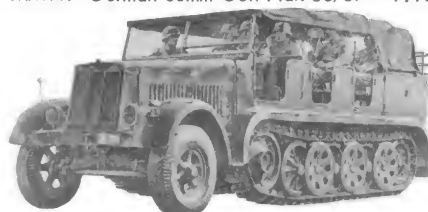


MM118 Scout Car 3.75  
Daimler Mk II

**NEW**

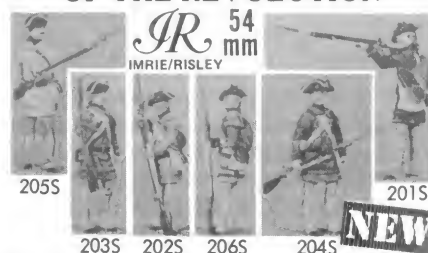


MM117 German 88mm Gun Flak 36/37 9.98



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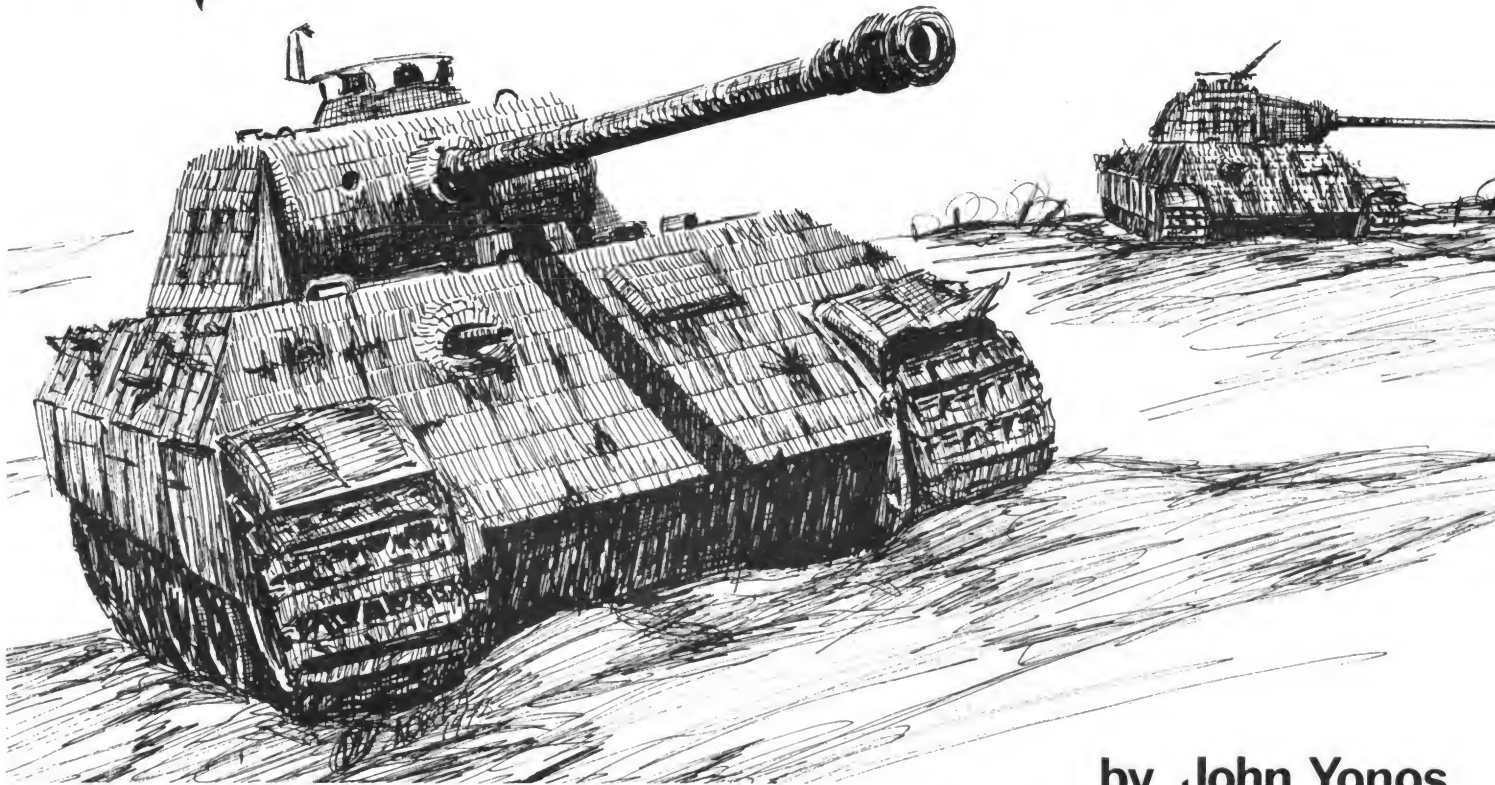
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# Anzio

## The German Offensive Fails ! Part Six



by John Yonos

In the late afternoon of 18 February, the Germans launched their heaviest attack on the Allies at Anzio. Down the "bowling alley" rumbled twelve enemy tanks; only the bridge being knocked-out stopped them from breaking into the final defense line. From their positions on the road, they fired directly into the foxholes of Company A, 180th Infantry. Under this fire, the German infantry attacked. By dusk, the fighting was general all over the German salient. The Americans held their ground; only small German units managed to infiltrate and these were eliminated during the night.

At 0400 on 19 February, German artillery opened-up on the tip of the salient, and ten minutes later the German infantry attacked. The 45th Infantry Division artillery fired on the attackers, with special emphasis on the front of the 1 Loyals and the 1st Battalion, 179th Infantry. Two battalions of Panzer-Grenadier-Regiment 15, and a few tanks reached the lateral road, after overrunning one company of the 1 Loyals. By 0800, the Germans were forced to withdraw from the artillery concentrations and from the tank guns of Company F, 1st Armored Regiment. The Germans repeatedly sent tanks down the Anzio-Albano road, and the tank destroyers of the 701st Tank Destroyer Battalion knocked-out two Tigers and five Panzer IV's by direct fire.

During the night, the German attack slowed. American units took advantage of the lull to reorganize and resupply. Company G, 180th Infantry managed to pull back from their encircled position. There were only fifty men left, but they came-out smiling.

On 18 February, it was planned to launch a counterattack to push back the Germans and to eliminate the salient into the Allied lines. Two forces were to be used: Force T under General Templar, consisting of the British 169th Brigade, was to seize the ground north of

the "dead-end" road; and Force H under General Harmon, consisting of the 6th Armored Infantry, a battalion of medium tanks and the 30th Infantry, were to attack up the "bowling alley" to the junction of the north-south road. German planes dropping mines in Anzio harbor prevented the 169th Brigade from unloading its equipment in time for the attack. Only Force H attacked, at 0630 on 19 February, with the limited objective of seizing the bridges near the "bowling alley" crossing the Spaccasassi Creek. At 0600, eight British field artillery regiments and eight battalions of Corps artillery opened-up on German positions and assembly areas. Naval guns and 90mm anti-aircraft guns fired on the Factory and Allied fighter-bombers were active over the beachhead.

The 6th Armored Infantry under Col. Steele and the 30th Infantry under Col. McGarr jumped-off on schedule. Col. Louis V. Hightower, commanding the 1st Armored Regiment, sent Company G in direct support of the infantry, and Company H along the right flank. At first, the infantry advanced well, meeting only slight resistance; then the 2nd Battalion, 30th Infantry came under German infantry fire from along La Ficocchia Creek and from Tiger tanks. Lt. Col. Lyle E. Bernard, commander of the battalion, was wounded and Lt. Col. Woodrow W. Stromberg took over. Company E was soon down to only one officer and fifty men, and Company F wasn't much better off. The tanks had been held-up until the engineers had repaired a blown bridge, and when the tanks arrived, the attack was resumed. Company H of the 1st Armored Regiment was so successful attacking along the right flank that they called-on the 180th Infantry to come and take their prisoners off their hands. At 1620, General Harmon called a halt as their limited objective had been taken. The main force was withdrawn and two infantry battalions engaged in aggressive patrolling until the next night, when

they too withdrew.

During the afternoon of 19 February, the 1 Loyals and a company of the 2 North Staffs, supported by tanks of the 46th RTR, wiped-out the German pocket along the lateral road. A platoon of Company D, 1st Armored Regiment drove up the Albano-Anzio road with orders to cause confusion and as much damage as possible. Three of the tanks were knocked-out by German anti-tank guns, but the remainder of the tanks helped the British flush some Germans out of cover before withdrawing under the cover of a smoke screen from their turret mortars.

On the 20th, a company attack by the 1st Battalion, Panzer-Grenadier-Regiment 71, sent against the 1 Loyals was easily repulsed. One prisoner reported that the company was all that was left of the battalion after the artillery had finished with them.

On the left of the Albano-Anzio road, the 2nd Battalion, 157th Infantry Regiment was still holding-out in "Caves". Their supply route was reopened by General Harmon's attack, and casualties were quickly evacuated and supplies brought up, but these men had been fighting-off heavy German attacks for four days and nights. The echoing of gunfire in the caves had caused many hearing problems for the men. By February 20th, the battalion was again isolated.....

On the night of 21 February, the 2/7 Queens fought its way through to relieve the 2nd Battalion, 157th Infantry. On the way, they had lost their heavy weapons when they ran into a German regiment moving toward the final beachhead line, so they arrived without mortars, anti-tank guns or heavy machine guns. An attempt to send-up tanks and anti-tank guns failed, with the loss of three tanks and one gun. As the Americans were turning over their heavy weapons to the British, the Germans attacked. Allied artillery fire was called-in and the attack was broken up, but the Americans decided to wait until the next night to break-out to friendly lines.

Fighting continued through the next day. About fifteen men were trapped in a group of houses some 300 yards south of the caves; after dark, an attempt was made to relieve these men and to break-out. The men in the houses could not be relieved, and after the break-out group had gone about a mile, they were ambushed by German forces with automatic weapons located in another group of houses. The Americans split up into small groups and continued toward their lines. In all, only 225 men returned to friendly lines; 90 of these were hospital cases.

Meanwhile, the British were having their own troubles in the Caves. Efforts to get supplies through to them failed, and on the 23rd, a German tank-infantry attack overran two companies and forced a third to withdraw into the caves. After dark, the 2/7 Queens tried to fall-back to friendly lines in groups of ten to twelve men, but less than half succeeded. The Germans now had control of the western shoulder of the Albano-Anzio road, but their positions were still outflanked by the British.

On this shoulder of the salient, groups of German infantry continued to infiltrate through the Allied forces. Both the British 1st and 56th Divisions, who were to cover this sector, were badly understrength. The 56th Division reported that its 167th Brigade was only 35% combat effective, its 168th Brigade only 50% and the 169th Brigade only 45%. The 2/7 Queens were down to 15% of their assigned strength. The steady probing by the Germans drained British strength more each day.

While the attacks on this shoulder of the salient were occurring, the Germans were also attacking the right shoulder. In the late afternoon of 20 February, enemy infantry attacked the 3rd Battalion, 180th Infantry, under

Lt. Col. James M. Churchill and Company F, 180th Infantry. These units were covering a road leading north from Padiglione and La Ficocchia Creek. At noon, three tanks of Company H, 1st Armored Regiment were damaged by enemy artillery, and in the late afternoon, the remainder of Company H and a platoon of Company I engaged an enemy tank-infantry assault working against the 180th Infantry. The ensuing tank battle caused heavy casualties to both sides; the Germans were forced to withdraw, and the remaining tanks of Companies H and I were consolidated under Company H. To protect the infantry from future armored attacks, the bridge over Spaccasassi Creek was blown-up, only moments before German engineers arrived to do the same thing.

The next day, more German infantry attacked the 180th Infantry, but these attacks were thrown back with heavy losses. 2nd Lt. Jack C. Montgomery of Company I, 180th Infantry took his M-1 rifle and some grenades out into "no-man's-land", where he attacked several German machine gun positions. At one point, he called-in artillery fire on a house which he suspected of being a German OP.



*Shoulder Sleeve Insignia -  
U.S. 45th Infantry Division  
"a Yellow Indian Thunderbird  
on a blood-red diamond."*

As soon as the artillery fire lifted, he rushed the house, where he captured 21 stunned Germans.

Finding the Albano-Anzio road too strongly held, General von Mackensen moved substantial forces to the area around the town of Cisterna di Littoria. The new plan called for an attack by four German divisions on the U.S. forces in the area between Isola Bella and Carano. If the attack was successful, the 29. Panzer-Grenadier-Division would be committed to widen the gap and push on to the final Allied defensive positions. By 29 February, the German forces were in position - 114. Leichte-Division facing southeast toward Carano, the 362. Infanterie-Division to their left, the 26. Panzer-Division west of Ponte Rotto, and the "Hermann Göring Division" before Cisterna.

German artillery laid-down a series of smoke-screens in front of the 3rd Infantry Division on the 28th of February. On the morning of the 29th, the Germans launched their assault. Only the attack by Grenadier-Regiment 1028, 715. Infanterie-Division, against the 509th Parachute Infantry Battalion (509th) was partially successful. German artillery shells began falling on the positions of Company B, 509th on a small hill northeast of Carano before dawn. As the shelling started, 1st Lt. John R. Martin, the company commander, called for counterbattery fire and defensive fires from the supporting artillery, and from the 4.2" mortars of the 83rd Chemical Battalion. A



smoke screen hid the German advance until it was almost on top of the forward outposts. The paratroopers held their fire until German engineers started to cut the perimeter wire with wire cutters and Bangalore torpedoes. The German attack wavered under the devastating firepower of the paratrooper's automatic weapons, and then pressed-on into the American foxholes. Lt. Martin was assumed to have been wounded, and so the Executive Officer ordered the company to fall-back to the next line of defense, about 700 yards to the rear. Only one officer and twenty-one men made it back to the new positions.

Having broken through this first Allied position, the I. Bataillon, Grenadier-Regiment 1028 struck at Company A of the 509th, north of the road below Carano. Lt. Col. William P. Yarborough called to request air support, but artillery fire was called-in to good effect. The 81mm mortar platoon and the three 60mm mortars of the paratroopers fired until the German infantry were so close that the mortar men had to grab their rifles. However, after penetrating about 800 yards into the intermediate line of defense, the attackers were stopped and forced to seek cover in the ditches. The German battalion had penetrated a maximum of 1500 yards along the 1000-yard front, and now, the 2nd Battalion of the U.S. 30th Infantry was instructed to prepare for a counterattack.

A small group of German infantry had infiltrated the positions of the 15th Infantry, but they were soon eliminated. Approximately one company of Panzer IV's and a company of infantry struck Isola Bella, and they drove part of Company G, 15th Infantry from their positions. Company F came-up in support and prevented further loss of ground to the attackers.

Another German tank-infantry attack hit the 2nd Battalion, 15th Infantry near Ponte Rotto. Pfc. John B. Silva, in charge of a machine gun crew located in a house, noticed a company of German infantry approaching his position. Waiting until they were within 50 yards, he opened fire with his .30 caliber machine gun, inflicting heavy casualties. German machine guns returned his fire, and enemy infantrymen crawled to within a few yards of the position to hurl hand grenades; still Silva held-out. Finally, the Germans brought-up a Tiger tank to within point-blank range and fired eight rounds, reducing the house to rubble. Pfc. Silva pulled himself out from under the rubble and began cleaning the machine gun, which he then set-up in another corner of the "house" to continue to hold-up the German advance. After thirteen hours of single-handedly holding his position, he was relieved by a full machine gun crew, and sent to the rear.

While these attacks on the paratroopers were taking place, the II. Bataillon, Grenadier-Regiment 1028 was also attacking Company I of the 30th Infantry. Pfc. Frederick Vance and Pfc. Eugene Procaccini were manning a BAR position on the right flank of their company. German infantry and artillery pushed the left and center of Company I back 500 yards, leaving the right flank extended as a salient. Another wave of Germans again struck the left flank, and the majority of the American fire was directed there. When the BAR position ran low on magazines of ammunition, Pfc. Vance returned to the company for more ammunition, leaving Pfc. Procaccini holding-off the Germans with his M-1 rifle. After Pfc. Vance returned to the BAR with several belts of ammunition and an additional M-1, they successfully defended the flank position for an hour. The Germans then brought up a self-propelled gun to bear on the exposed position. While the enemy gun was attempting to find the range, the two Americans continued to pick-off Germans attacking the exposed flank. Finally, the German SP gun scored a direct hit. Both Pfc. Vance and Pfc. Procaccini were posthumously awarded the Distinguished Service Cross.

At 2100 hours on 29 February, the 2nd Battalion of the 30th Infantry, under Lt. Col. Woodrow W. Stromberg, launched its counterattack to regain the ground lost in the 509th's defense sector. About 1000 yards from the line-of-departure, they were held-up by a fortified house, around which there were several German machine guns. Company F was assigned the mission of eliminating this enemy position. Pfc. Philip E. Nickerson, acting machine gun section leader, ordered one of his squads into action, and forced one German machine gun to withdraw. On several occasions, Pfc. Nickerson exposed himself to enemy fire in order to spot additional German guns. Twice he crawled through a hail of enemy machine gun and mortar fire to obtain more ammunition. Then, his machine gun jammed. Ordering the gun crew to hold off the Germans with their rifles and pistols, he took the gun apart and cleaned it. Then a mortar shell fragment struck and destroyed the tripod. Pfc. Nickerson picked-up the machine gun and, firing it from the hip, killed four Germans, wounded three and captured two more. He was awarded the Distinguished Service Cross.

1st Lt. Paul F. Stanley took command of Company F after its commander, Captain Howell F. Morgan, was wounded. In total darkness, the company had become disorganized; Lt. Stanley led his company back about 100 yards, reorganized his men, and then resumed the attack.

The remainder of the battalion had also become



Typical terrain in the Anzio beachhead. Note the flatness and lack of real cover for equipment and personnel. The equipment in the foreground is German, destroyed by Allied artillery fire during the attacks. In the foreground on the left is what remains of a motorcycle, while a half-track and truck rest in the ditches further down the road.

(Photo: U.S. Army)

disorganized by the darkness and German fire, but they reached their objectives, recovering the ground lost by the 509th Parachute Infantry Battalion, which was pulled-back into divisional reserve. The 1500 yards of German salient was now eliminated. During the day, the Germans had lost fourteen tanks, several hundred men killed and wounded, and over 150 men were taken prisoner.

Along Le Mole Creek east of Carano, the 2nd and 3rd Battalions, 7th Infantry were attacked by elements of 362. Infanterie-Division. These attacks were generally supported by tanks, grouped in platoons of three and six vehicles. One platoon of Company G was overrun by enemy tanks and infantry, and Colonel Harry B. Sherman, commanding the 7th Infantry Regiment, was forced to commit part of his reserve 1st Battalion. With these additional troops, the ground was successfully held.

Farther east, elements of the 26. Panzer-Division struck the right flank of the 3rd Battalion, 7th Infantry with Panzer IV's and Tigers, supported by armored infantry. The Germans captured the bridge at Ponte Rotto and drove Company L back approximately 1000 yards. Lt. Col. William A. Weitzel, the commander of the 3rd Battalion, short of reserves, sent a platoon of Company I to help check the German attack. Late in the afternoon, Nebelwerfer fire was received, in support of another attack by elements of the 26. Panzer-Division.

Elements of the 715. Infanterie-Division attacked the right flank of the 3rd Division along the Mussolini Canal, and a composite unit of the 715. Infanterie-Division and the 16. SS-Panzer-Grenadier-Division ("Reichsführer-SS") attacked to capture a bridge across the Cisterna Creek. They were thrown back by troops of the 4th Ranger Battalion. Kampfgruppe Schindler, composed of men from the 715. Infanterie-Division and the "Hermann Göring" Division, attempted to take a bridge south of the village of Borgo Sabatino (also known as "Gusville"). The men of the 1st Special Service Force ambushed the Germans east of the bridge, and the Germans became so disorganized that by the end of the day, the 1SSF had captured 4 officers and 107 men, approximately half of the German force.

German attacks on 1 March were similar to those on the previous days. The principal action occurred in the area around the captured bridge near Ponte Rotto. Since the night of 29 February, bazooka squads had tried to reach the German tanks around the bridge, but failed due to the German infantry protecting the vehicles. An attempt was made to illuminate the tanks with flares so that tank destroyers could fire on them; this also failed as pouring rain extinguished many of the flares. At 0340 hours, the tanks rolled into the positions of Company K, 7th Infantry, astride the road northwest of the bridge, blasting the Americans out of their foxholes and almost annihilating one platoon. All the bazookas were out-of-order, so the troops fought back with Molotov cocktails and sticky grenades. When artillery came to their aid, the enemy attack was broken-up.

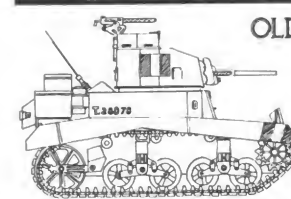
On 2 March, the men of the 2nd Battalion, 7th Infantry were still trying to knock-out the German tanks around the bridge. A destroyed Sherman prevented anti-tank guns from being brought up, so it was left to the bazooka squads to infiltrate into the German positions. In the morning, one squad got close enough to throw Molotov cocktails; two failed to ignite and three bazooka rounds bounced off the tanks! That night, the Americans were more successful... one tank was set afire and five bazooka hits were scored on a Tiger. At Isola Bella, German tank recovery crews attempted to retrieve a Tiger and an Elefant, but fire from the 601st Tank Destroyer Battalion severely discouraged them.

At dawn on 3 March, the Germans again attacked the 3rd Battalion of the 7th Infantry, southwest of Ponte Rotto. A tank-infantry attack by elements of the 26. Panzer-Division forced Company L, 7th Infantry to fall back slightly but the ground was held. That afternoon, Company A and Company B were sent to counterattack the bridge at Ponte Rotto, under smoke fired by Allied artillery to conceal the attack. Company B reached its objective northwest of the bridge without difficulty, however Company A ran into thick enemy tank and artillery fire when they reached the temporary crater road block. Captain Athas, the company commander, was killed, and when the two platoons retreated, there were only thirty men left, but this attack had served to blunt further German attacks.

This marked the last major offensive launched against the Allied forces at Anzio. The German Fourteenth Army had suffered over 20,000 casualties; at least 30 enemy tanks were destroyed and unrecoverable since they lay within Allied lines. Many of the German commanders, down to the company grade, were called to Germany to explain the failure to lance the

Continued on Page 36

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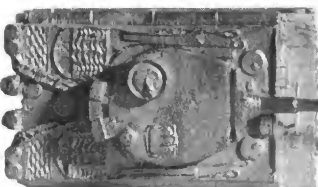
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# Modelling for Perfectionists

Creating a Canvas Top for the Tamiya Sd.Kfz. 7 Halftrack, by S. R. Cobb

After just buying the Tamiya Sd.Kfz. 7 Halftrack, I was surprised at the amount of detail, except for the out-of-scale and awful-looking "canvas" top. . . . . since I wanted my "canvas" top to be in the "up" position, I proceeded to make another one from metal and cloth. When starting such a project, first get your materials together. You will need: 1) Bellona Print #9, 2) the "old" Tamiya top (for a rough guide), 3) a Soldering Iron (an Xacto Hot Knife will do) and some small diameter rosin-core Solder, 4) some copper wire - approximately 3/64" diameter (size from a scaled-up Bellona drawing) -, 5) a very fine texture piece of cloth (approximately 4" by 6"), and 6) some white glue.

Shape the wire frame, using the "old" Tamiya top and the Bellona print as a guide to locate the joints and the proper places for bending. Before the bending process, the six (6) individual pieces of copper wire for the frame should be in lengths of: 3-1/2", 3-3/4", 4-3/4", 5", 5-1/4" and 7-1/4". Next, proceed to locate the joints, marking the wire in case of movement; then clamp the wires into position and solder them. When finished, fit the frame to the model for a "sure" fit, then clean-up the joints with steel wool.

Once the frame is completed, cut the piece of cloth to the rough shape of the frame, referring to the "old" top. Run a bead of white glue along the frame ends and fold the cloth around the outer edge. Let this dry, then run a bead of glue along the top edge of the frame and fit the cloth so that there is a small amount of sag. Use glue as needed to complete the top.

Before starting this project, it is advisable to look at all the reference books you can find, in order to understand each of the top's folds and sags; in order to make it look as realistic as possible. Also, be patient (!), for the results are breathtaking and you'll create a top that not only looks correct (and more importantly, is more realistic), but also "feels" correct.

## Tactical Markings of the Waffen-SS, Part 2 (Continued from Page 11)

There has developed quite a controversy concerning the post-1943 use of the "Kampftruppe" by the 2. SS-Panzer-Division "Das Reich". This difference of opinion revolves around the use of a totally different tactical symbol on divisional equipment, starting just prior to the attack on Kursk in the summer of 1943 (Unternehmen Zitadel). Photographic evidence shows that the "Kampftruppe" was in use at least as late as the late spring of 1943; the marking appears on two rather poor photos of Panzer III, Ausführung L's. In the next issue, I will discuss the controversy and outline several possible solutions, as well as provide markings and photographs for another Waffen-SS division. . . . .

## German 3.7cm and 5cm Ammunition (Continued from Page 5)

a short-range method of increasing the effectiveness of the 3.7cm anti-tank guns, this solution did keep many otherwise obsolete weapons in use.

All fuzes used with these projectiles were impact actuated. The Flak fuzes, Kopf Z Zerl, . . . were also termed "self-destructing". This meant that a second fuze train was ignited by the muzzle blast (flash) upon firing. . . this second fuze train was designed to detonate the projectile at maximum range. Thus, it was intended that no live Flak projectile should accidentally fall on friendly troops. These self-destructing fuzes usually had a painted red tip, while the other impact fuzes, eg. Az 39 had yellow tips.

Next topic: Ammunition for the 12.8cm gun of the Jagdtiger.

## The Baron's Bookshelf, with Book Reviews (Continued from Page 18)

The main criticism with this book is that it does not cover the Valentine tanks of the 1st Army Tank Brigade during their first combat encounters (November-December 1941) but then the 23rd Armoured Brigade was still in England at that time, and there are a number of good photographs of these original vehicles in operation. All-in-all, though, the "Valentine in North Africa" is a must for the Anglophile armour buff.

## Anzio, the Soft Underbelly of Europe (Continued from Page 35.)

abcess below Rome. Everyone blamed the other branches and the Luftwaffe for lack of support, however, they all agreed that Allied firepower was the single biggest factor in the German failure. Allied artillery had poured-out ten times the fire that the Germans had available to them. . . . .



# Tamiya's Sd.Kfz.251 Halftrack

by Robert McArthur

Well, Tamiya Plastic Model Company's long-heralded but much delayed model of the Hanomag Sd.Kfz.251/1 Type C is finally out, and has been well worth the wait. For once, Tamiya has given us a model where the only molded-on details are the rivets and gratings of the hull and deck plates. Everything else, vehicle tools, etc., must be "glued-on". The kit is molded in Tamiya's usually gray plastic. Construction is simple and straightforward with all pieces fitting together easily. There were a few mistakes in the Japanese instructions which came with my kit (diagram #7 is correct as drawn, but part B21 is actually part B25 and vice-versa) but hopefully these will be corrected by the time the English versions are printed. The only inaccuracies (and these are really minor) are the mounting of the rear MG 34, lack of locking mechanism on the inside of the rear doors (these open and close, by the way), and an unrealistic method of attaching the front wheels, which are plastic and not rubber. The tracks are good, but are not as detailed on both sides as those with the Bandai 1:48th Hanomag, but they are much better than the rubber tracks supplied with the Nitto 1:35th scale version. The tracks are, however, somewhat flat and fail to accurately capture the distinctive "shoe" appearance of Hanomag tracks. I would suggest that if you want your road wheels to turn, that the mold marks on the torsion bars be carefully filed or sanded-off, otherwise they tend to stick. But, since the kit is not motorized, and the front wheels do not turn, it's just as well to glue the torsion bars in place. The kit's decals are good but uninspired... I would like to see something for a change besides Afrikakorps, Grossdeutschland and the 24. Panzer. Two types of crosses, white-outline red numbers and three types of tactical markings are included. Five figures, molded in white plastic, are included and as usual with Tamiya figures, they seem best suited for the pre-1942 period. They come with full equipment. These are some of the best animated 1:35th figures available! One of them, depicting a grenadier jumping from the side of the vehicle, is a gem! A driver is not included, but it could be easily converted from Tamiya's tank crew set, or from one of the seated figures from the Tamiya Sd.Kfz.7 8-ton halftrack. All-in-all, this is a nice little kit and well up to the recent high standards of Tamiya's KV-IC and "88" and one which has many, many conversion possibilities.

## Letters to the Editor

To the Editor:

After having viewed the many fine drawings that you include in AFV-G2 of vehicles viewed from three or four views, I've wanted to use them to scratch-build these vehicles. However, due to the fact that I know little if anything about drafting or mechanical drawing, I really don't know how to use these plans correctly. For instance, how do I take measurements of sections of a drawing that only shows that section in perspective?

Also, it would be helpful if your staff could advise me on what kinds of heavy tools I should equip myself with at the least cost. Like, what kind of lathe should I buy? Do I need one in the first place? How about air-brushes, drills, etc.?

Better yet, it would be great if you could start a column in your magazine dealing with just these problems, or even a series of articles. Your aid and assistance would really be appreciated; I'm sure I'm not alone.

Peter J. Espada  
Johnson City, Tenn.

Note from the Editor:

In one or two issues, we will be starting a series of articles providing templates (drawings) worked up from our regular center-spread 4- and 5-view drawings. These drawings will be the product of a new staff artist, Mr. Jay Johnson, and should prove helpful for modeling conversions.

We have received a preliminary manuscript (submitted for our "ideas") covering "Scratch-building Basics". This article will cover tools and modeling techniques, and with revision of some content, we should be ready in an issue or two. I should also mention that reader suggestions are very welcome, and we'll do our best to provide what readers want.

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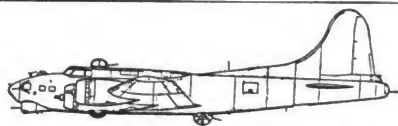
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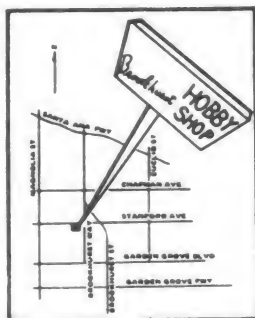
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